

Ontario 2025 Common TMDs

John R Droter DDS
Annapolis, Maryland

Annapolis, Maryland
John R Droter DDS

www.jrdroter.com

John R Droter, DDS

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John R. Droter, DDS
Facial Pain, Diagnosis and TMD Rehabilitation

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SEMINAR DOWNLOADS

Upcoming Seminars

July 20, 2016 D-PAS Hand on- In Office, Annapolis MD
July 21-23 2016 Droter Hands on- In office, Annapolis MD
Call Kim 301-805-9400

Pankey TMD Week, Key Biscayne FL
October 23-27, 2016
October 22-26, 2017
Call [LD Pankey Institute](#) 305.428.5500

Spear TMD Course 1 with Dr Herb Blumenthal
Aug 11-13, 2016, Scottsdale Arizona
Call [Spear Education](#) (866) 781-0072

Most Popular and Common Downloads

TMD Supersheet Download
[SuperTMDx13.11](#)

Brux supersheet Download



Hello. I am:

John R Droter DDS
Annapolis, Maryland

Annapolis, Maryland
John R Droter DDS

Milestones



Visiting Faculty LD Pankey Institute 2008-

Visiting Faculty Spear Education 2013-2020

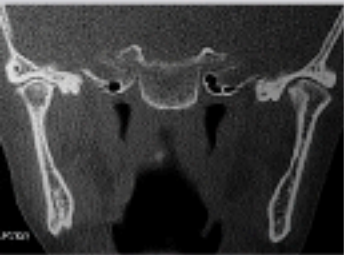
Visiting Faculty Orthodontic Program
Washington Hospital Center 2000-2012

Past staff AAMC: Orthopedic Rounds
In OR for TMJ Surgeries

Devoted Facial Pain Practice 1996
(No Hygiene to Check!!)

CT and MRI Imaging Joints 1992
Guy Haddix, DDS: Mentor
(3,000+ images and rising)

Post Grad CE- GPR, LD Pankey Institute, Dawson, Mahan, Gremillion, Spear, Kois



Disclosures:

Atomic Skis- Sponsored.
I got stuff.

LD Pankey Institute TMD Course
Honorarium

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

Living Tree Dental Lab
High Quality Dental Orthotics
License fee on my designs



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





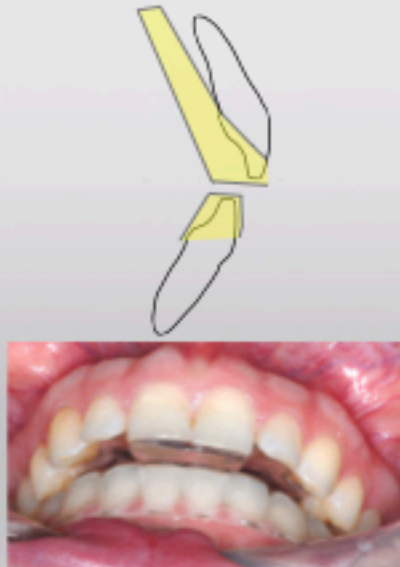
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3D Printed Orthotics

D-PAS
Diagnostic-
Palatal Anterior Stop



Brux-PAS
with lower Essix



Hard Lower Posterior Stop
with upper essix



Hard Lower Full Coverage
Centric Relation Orthotic



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 Meniscus, TMJ
Perforation Pseudodisc, 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 **Potency** (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 Centric occlusion Max/IC 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 Disharmony Standing
Postural Disharmony Walking
Postural Forward Head Position
Upper Airway Resistance, UARS

7. Other

Nerve Entrapment Masseteric Nerve due to Masseteric hypertonicity
Neuroma 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

6 Common TMDs

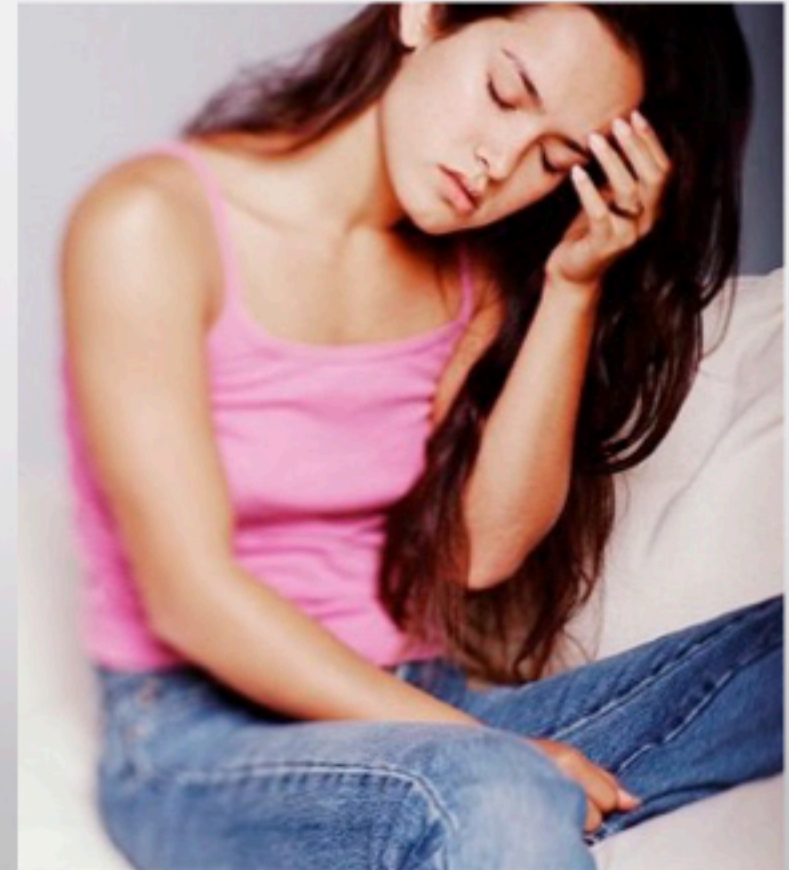
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

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



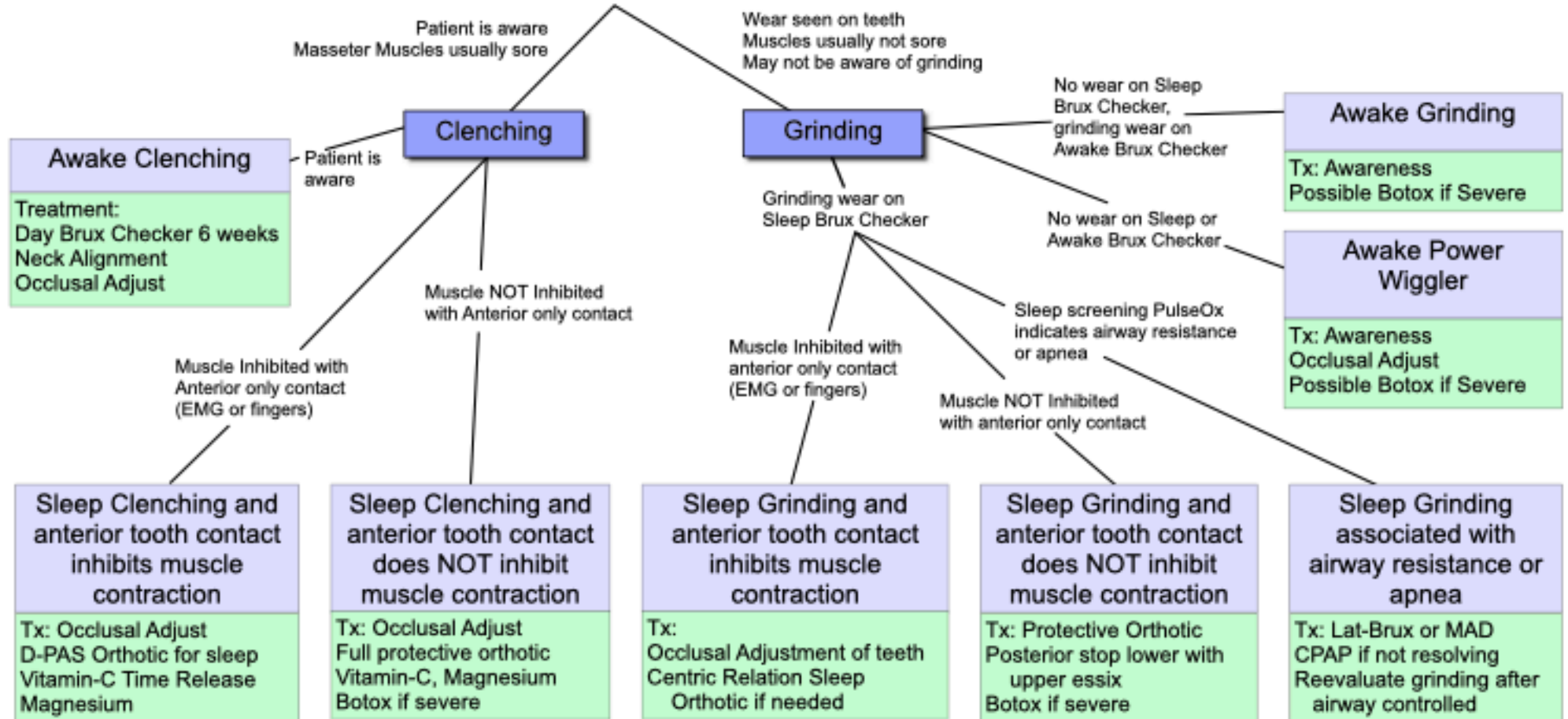
6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium and Vitamin C 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
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BRUXING: PARAFUNCTIONAL TOOTH CONTACT





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

If patient is unaware of clenching-

Plant seed at hygiene visit

Do you clench?

Grinding

See tooth wear

Patient is usually not aware

Buttressing bone if teeth are tight

If tooth mobility, on excursions

Strong Masseters

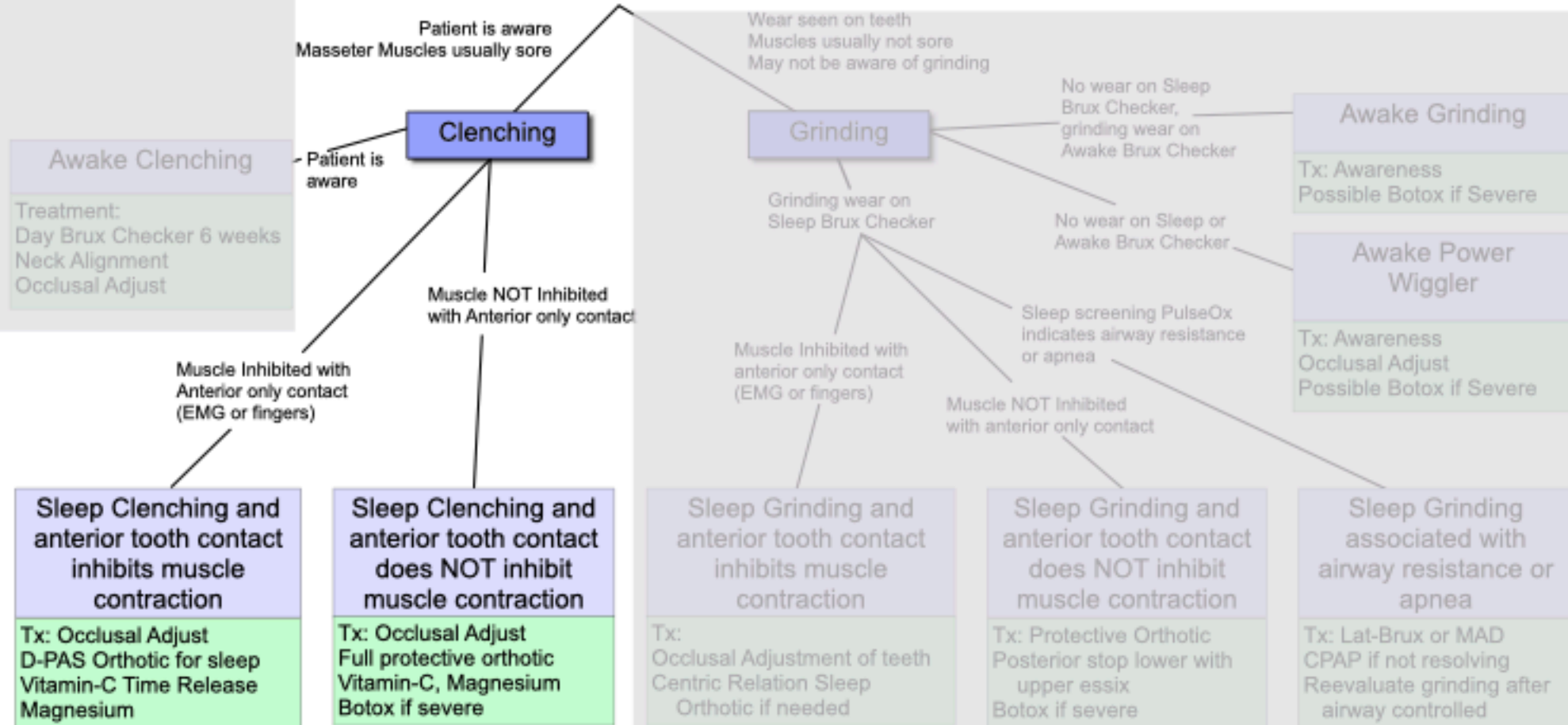
Slight if any soreness muscles

Usually no muscle pain

Parker Mahan-

"Women Hurt, Men destroy"

BRUXING: PARAFUNCTIONAL TOOTH CONTACT



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

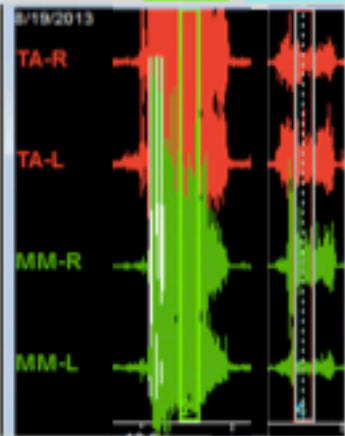


BioResearch mScan



Patient with muscles inhibited by anterior only contact

	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

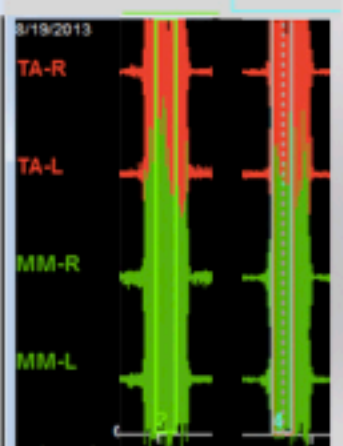


Major decrease in muscle power with D-PAS

BioResearch EMG

Another Patient with muscles NOT inhibited by anterior only contact

	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



Muscle power same with D-PAS



Diagnostic Palatal Anterior Stop



Choosing the Correct Night Guard

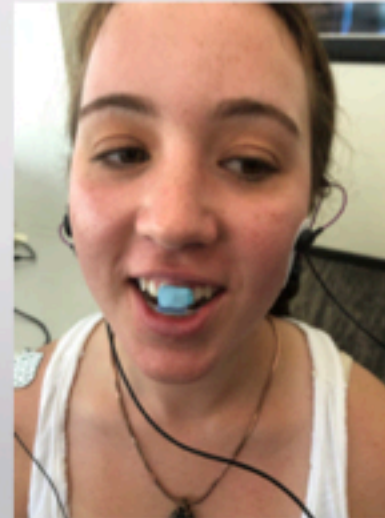
M-Scan EMG Electromyography



Clench back teeth



Clench
anterior stop

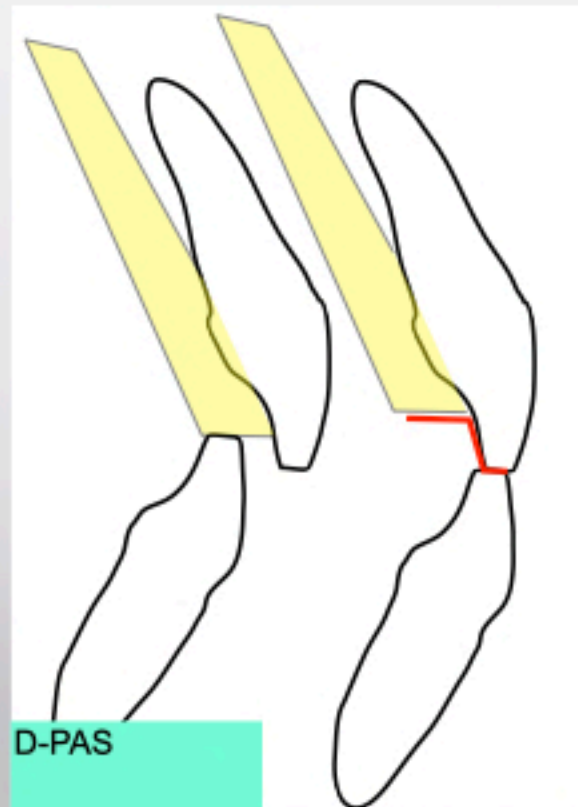
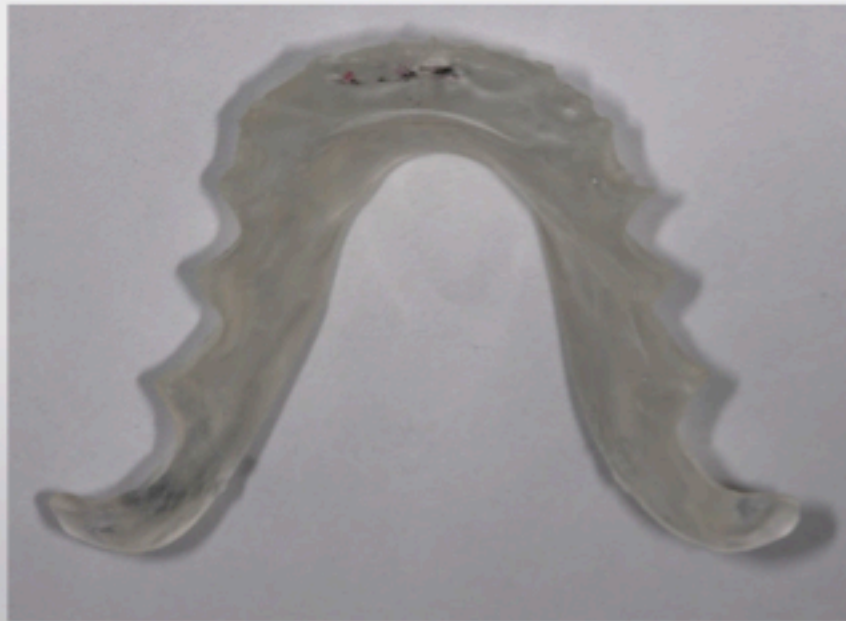


Can place moderate force
on front teeth

Clench
Back teeth +250 μv
Front teeth +121 μv



Diagnostic Palatal Anterior Stop D-PAS



Basically an upper Hawley with anterior stop without clasps or wire



Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks for sleep, and occasional daytime

Better- Decrease in Symptoms

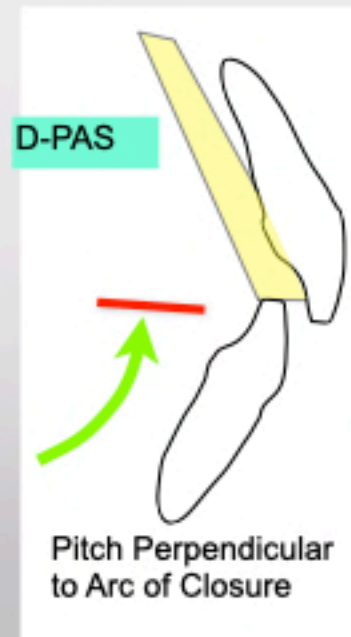
Sleep Clenching Inhibited: Wear D-PAS as night guard
Orthotic Improved Airway: D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

Worse- Increase in Symptoms

Mechanically Unstable TMJ, joint subluxation
Intracapsular Problem TMJ
Orthotic Made Sleep Airway Worse

Stays the Same- No Change in Symptoms

Damaged TMJ are mechanically stable
Pain not related to occlusion



Stapelmann H, Türp JC. The NTI-tss device for the therapy of bruxism, temporomandibular disorders, and headache.....BMC Oral Health. 2008 Jul PMID: 18662411

D-PAS Burs Shape and Polish



Brassler H351G.11.070 HP G-Cutter Carbide
 Brassler 295E HP E cutter
 Preat F-8 Silicon Polisher
 Keystone Scotch-Brite Red Polisher, Fine

D-PAS Handout to patient

D-PAS Diagnostic Palatal Anterior Stop Test

Dr John R. Drotar, DDS

This is a diagnostic test, not treatment.

D-PAS Instructions:

For next 2 weeks wear for sleeping and occasionally during the daytime.
 Try wearing all day for 1 or 2 days.
 Put D-PAS in if you are having sore muscles or a headache.
 You will need to remove to eat.

Keep track of what changes you notice.
 It is not unusual for your teeth to fit together differently in the morning as your jaw becomes better aligned.

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 sat 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, stop wearing for 2 nights 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 for sleep, and occasional daytime

Better- Decrease in Symptoms

Sleep Clenching Inhibited: Wear D-PAS as night guard
 Ortho Improved Airway: D-PAS as night guard
 Occlusal Muscle Disharmony: Occlusal Adjust

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Stephenson H, Tzip JC. The NTI-ss device for the therapy of bruxism, temporomandibular disorders, and headaches. ...JBrC Oral Health. 2008 Jul PMID: 18662411

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

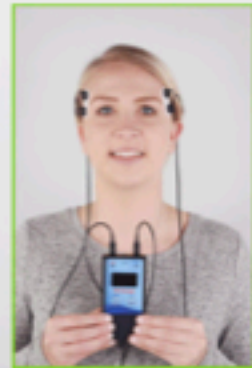


Causes

- Uneven occlusion, especially heavy anterior
- 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

TMD Therapies for Clenching

Medicinal

Vitamins: Vit C

**Minerals: Magnesium
Glucosamine**

Vit C 1,000 mg
before exercise
or clenching



Doctor's Best Vegan
Glucosamine/Chondroitin/MSM



Natural Calm
Magnesium Citrate
1 teaspoon (162mg)



Mother Earth Ionic Angstrom
Magnesium 2 oz bottle
0.5 teaspoon sublingual

www.meminerals.com





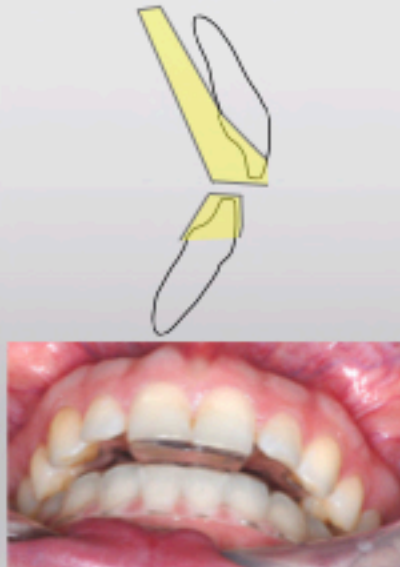
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3D Printed Orthotics

D-PAS
Diagnostic-
Palatal Anterior Stop



Brux-PAS
with lower Essix



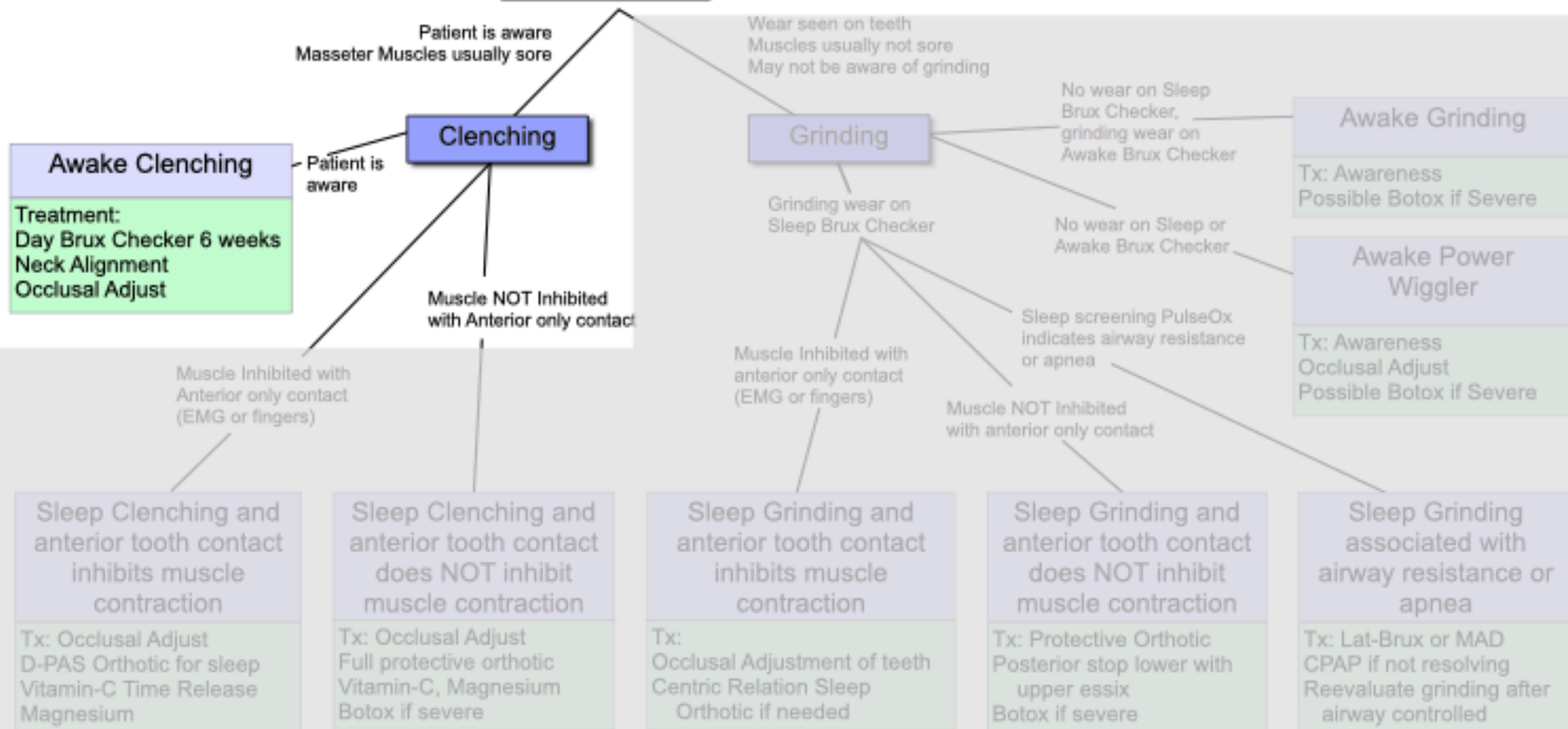
Hard Lower Posterior Stop
with upper essix



Hard Lower Full Coverage
Centric Relation Orthotic



BRUXING: PARAFUNCTIONAL TOOTH CONTACT



Daytime Clenching- Clear Brux Checker Increases awareness to break habit

Very thin: Similar to mylar used for composites
50 μ m thick



Living Tree Dental Lab
(865) 509-4509
connect@livingtreelab.com

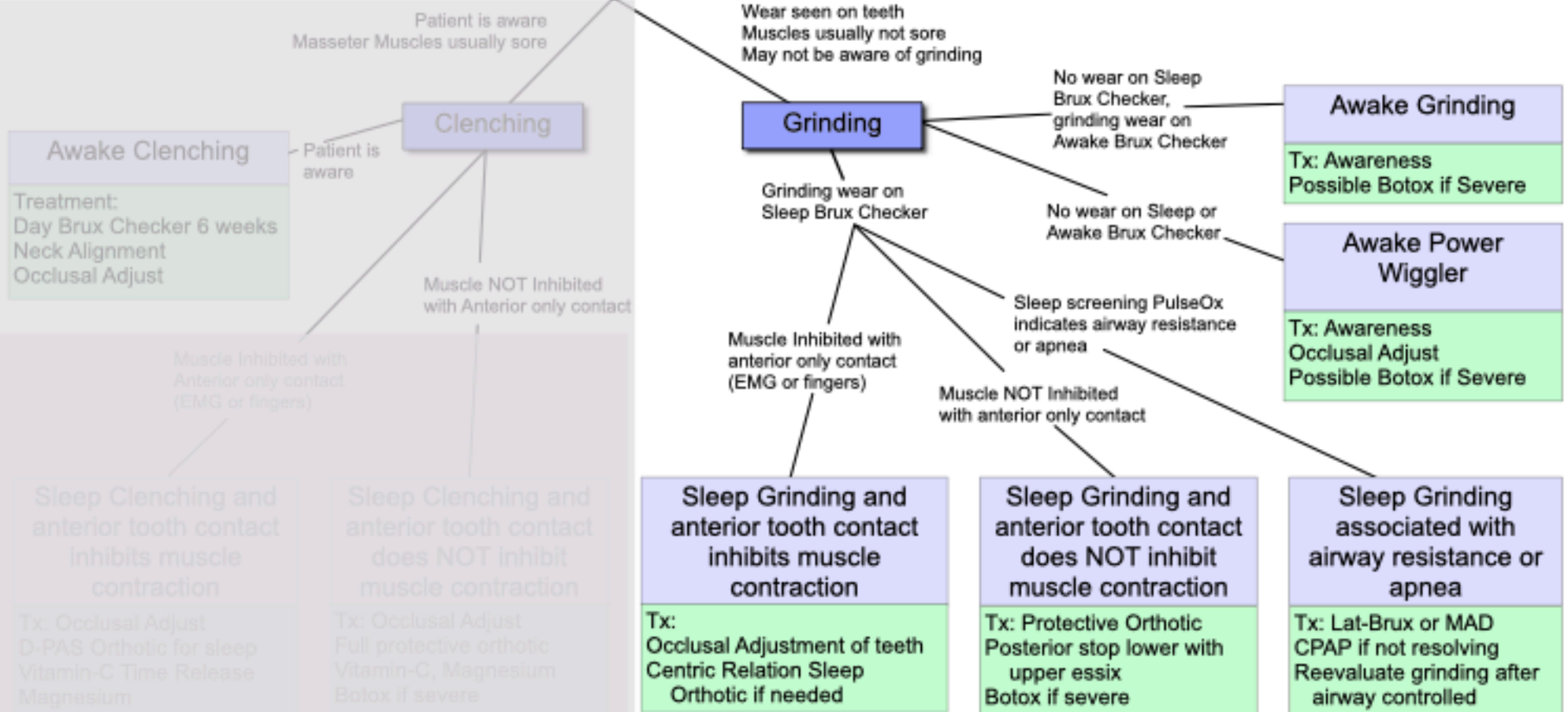
Material from:
Great Lakes Orthodontics
Platzhalterfolie by Scheu
Scheu Ref # 3202.1



6 Common TMDs

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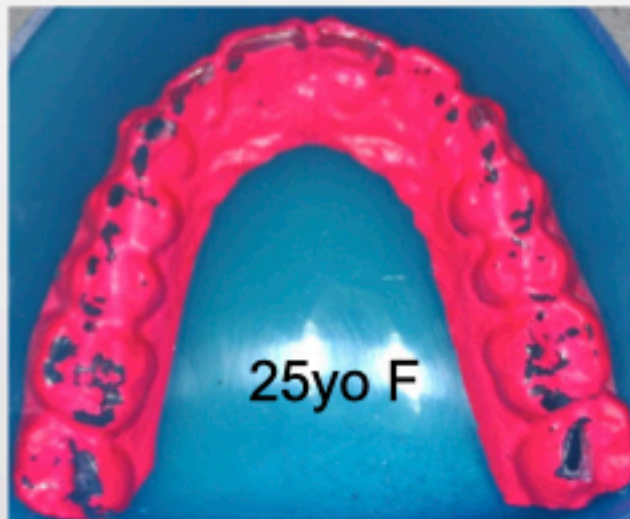
2. Does this occur awake or asleep?

Brux Checker
Great Lakes Orthodontics

0.1mm Mylar



Made on Biostar Machine



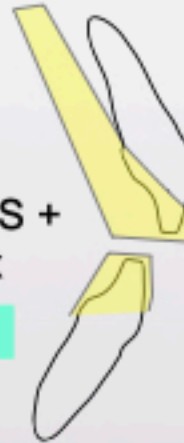
Which Occlusal Orthotic for Grinding?

Lower Posterior Stop with upper essix



Brux-PAS +
Essix

Brux-PAS



Upper Hard CR Orthotic



Lat-Brux



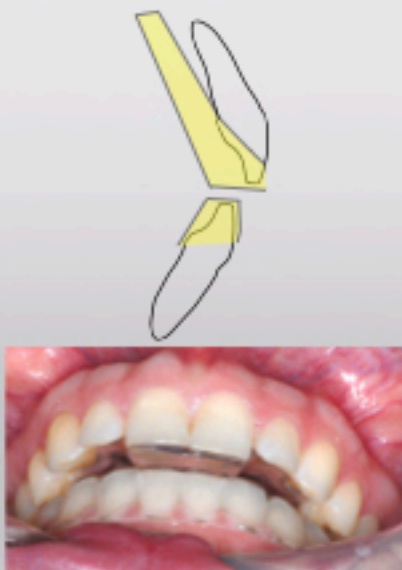
Nylon Herbst
Great Lakes Ortho

3D Printed Orthotics

D-PAS
Diagnostic-
Palatal Anterior Stop



Brux-PAS
with lower Essix



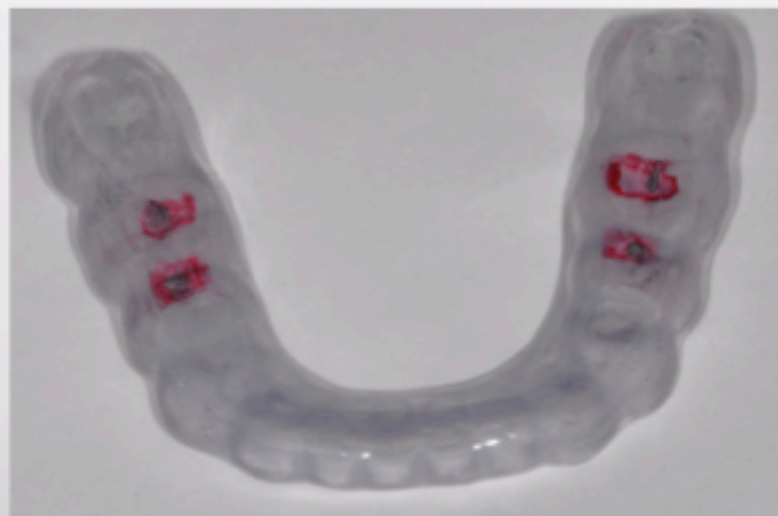
Hard Lower Posterior Stop
with upper essix



Hard Lower Full Coverage
Centric Relation Orthotic



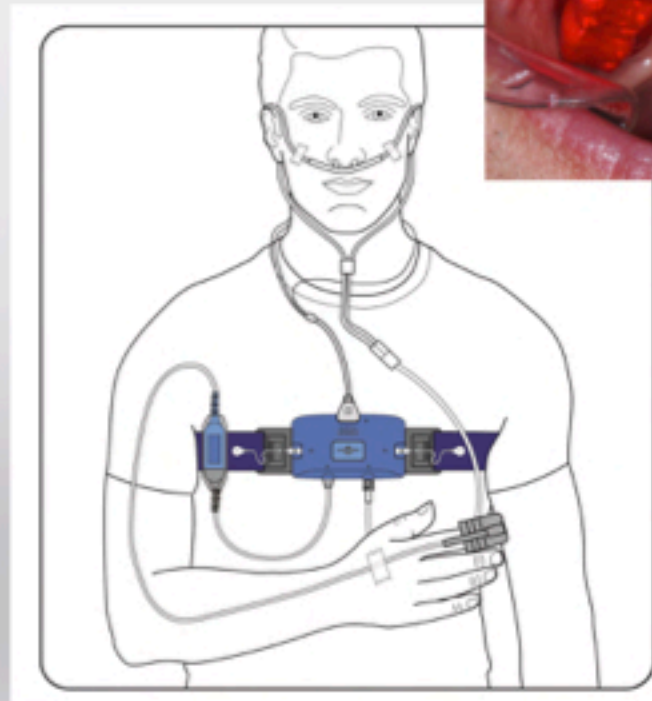
Lower Posterior Stop Night guard with upper Essix



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

Diagnosis

Sleep Grinding Airway Related

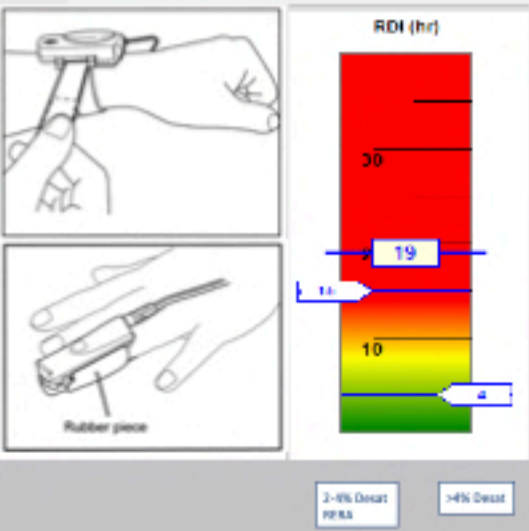
Pattern

Worn Teeth
Upper Airway Resistance

Management

Treatment

Mandibular Advancement
Appliance (after MD approves)



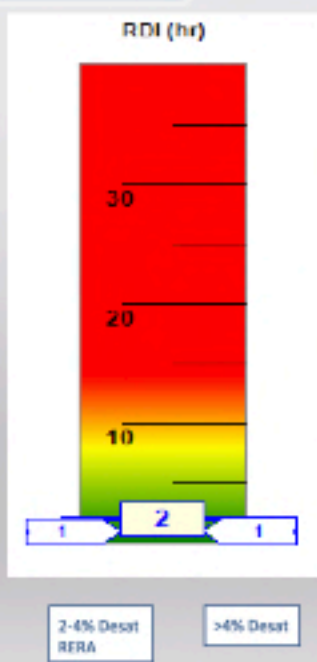
PULSOX 300i, Konica Minolta
with data analysis Patient Safety, Inc.

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

Nylon MAD
Great Lakes Ortho



3-SAD
DIGITAL - SLEEP APNEA DEVICE



2-4% Desat
RERA

>4% Desat

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Occlusal Muscle Disharmony

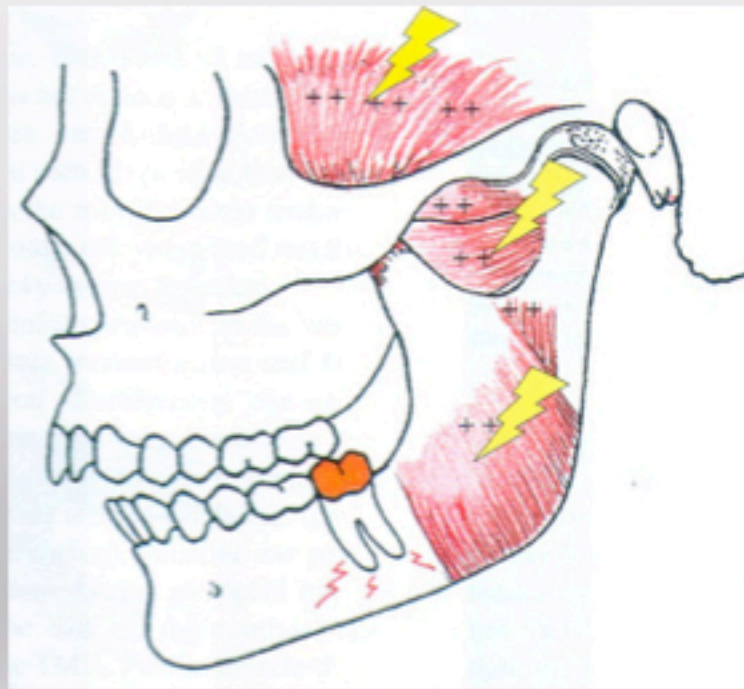
Uneven tooth contact with condyles fully seated triggers muscle activity

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

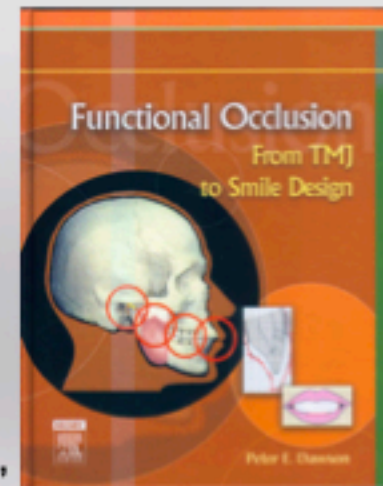
Disharmony in all muscles: Splinting/Bracing

Muscles sore from overuse

Muscles do not think- CNS input

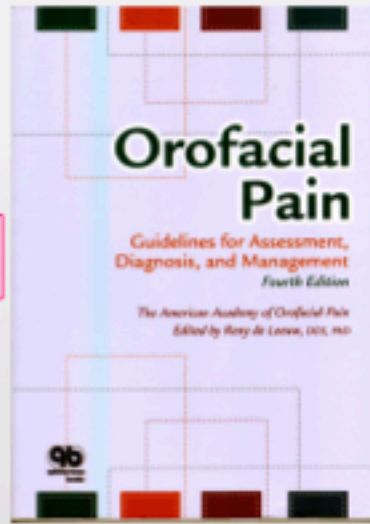
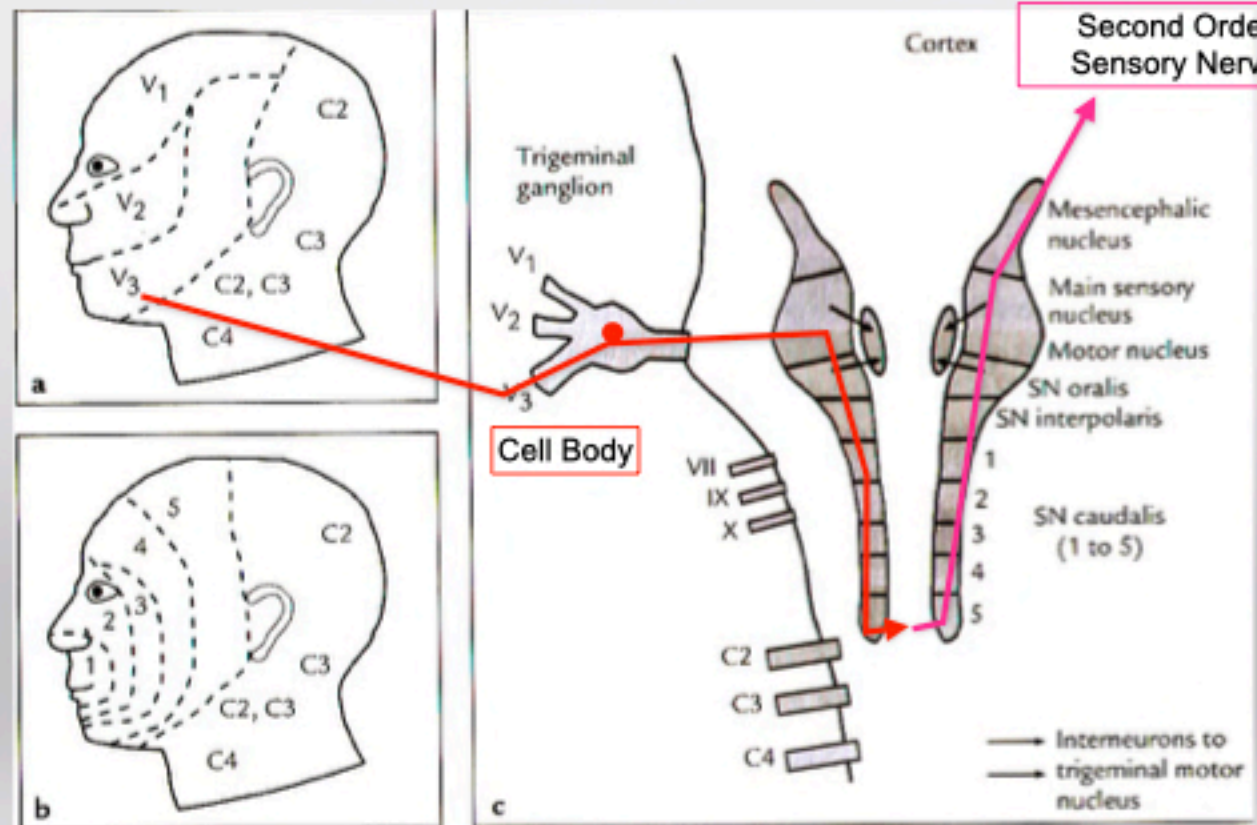


from Dawson's Textbook, "Functional Occlusion"



Trigeminal Ganglion-
Cell bodies of trigeminal primary sensory neurons
Trigeminal Nucleus
Connection of primary neurons with secondary neurons

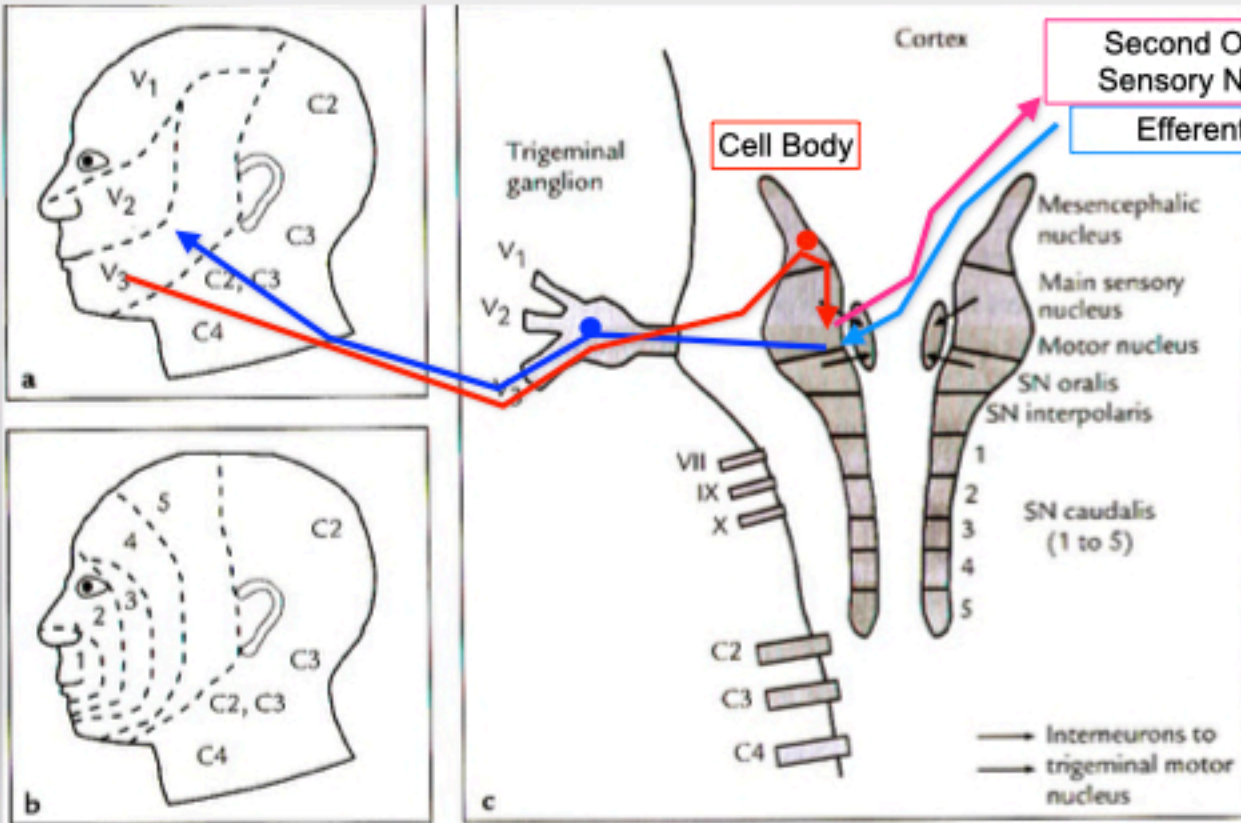
Afferent
First Order
Sensory Nerve



First Order PDL sensory neurons and proprioception neurons of TMJ closing muscles have their cell bodies in the upper section of the Trigeminal Nucleus and synapse with their second order neurons in the Motor nucleus

Efferent motor neurons to the TMJ muscles also synapse in the motor Nucleus

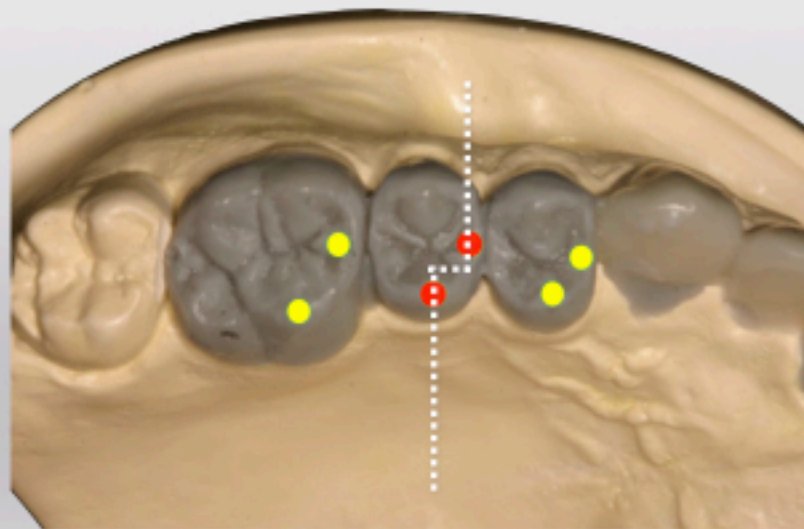
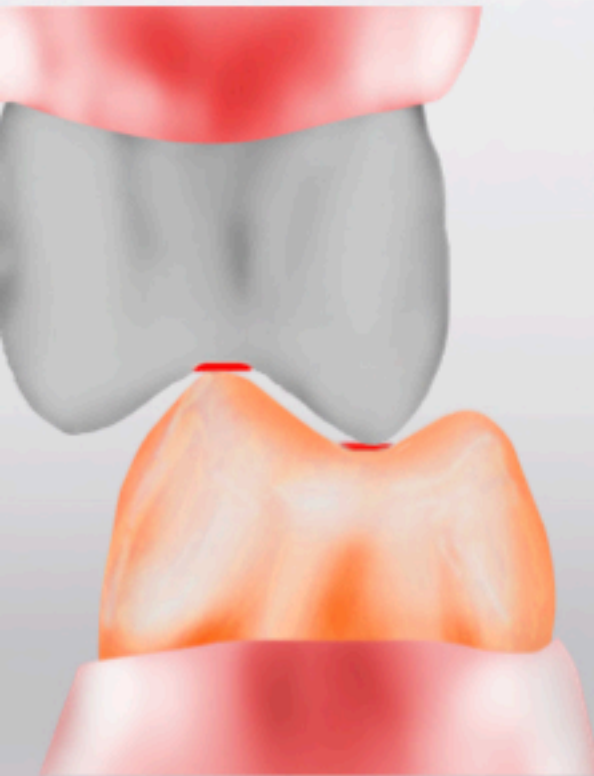
PDL Afferent
First Order
Sensory Nerve



Blink and PDL only peripheral nerves with cell bodies in CNS

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.



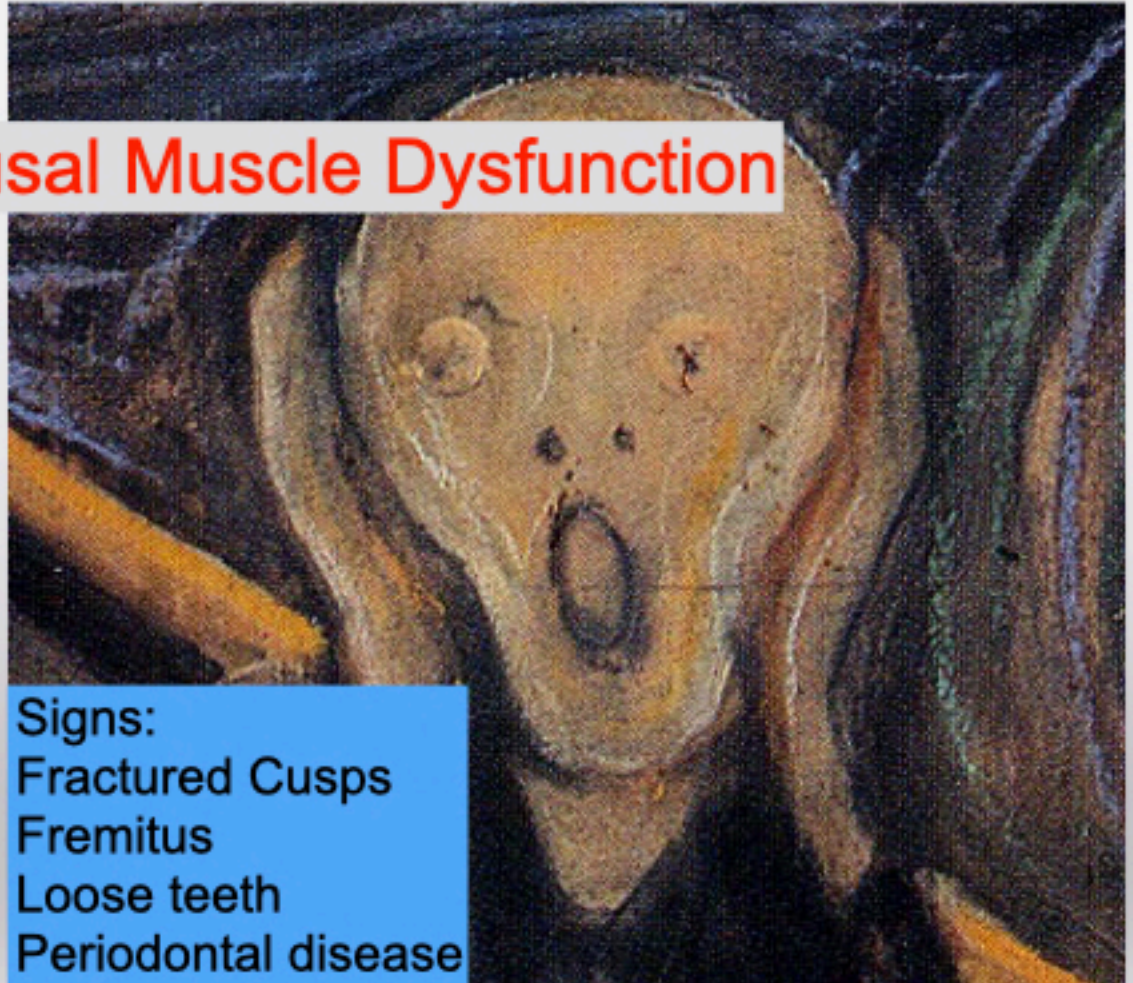
Drawing by Dr Jim Kessler

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

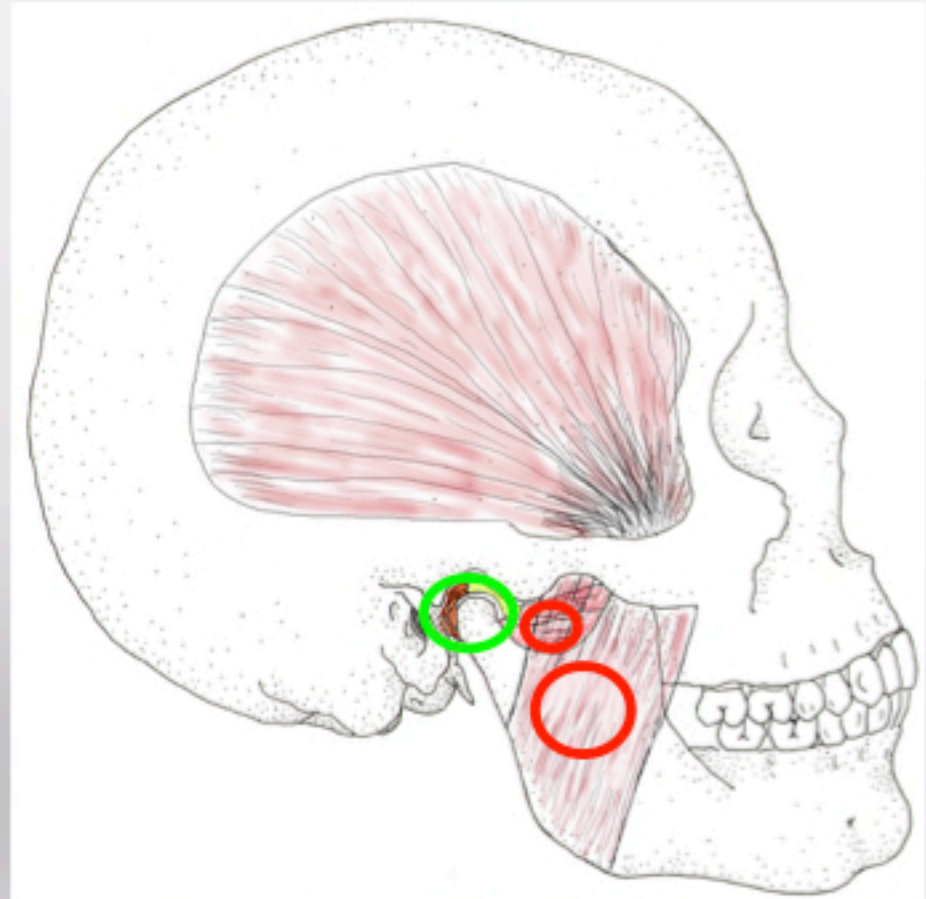
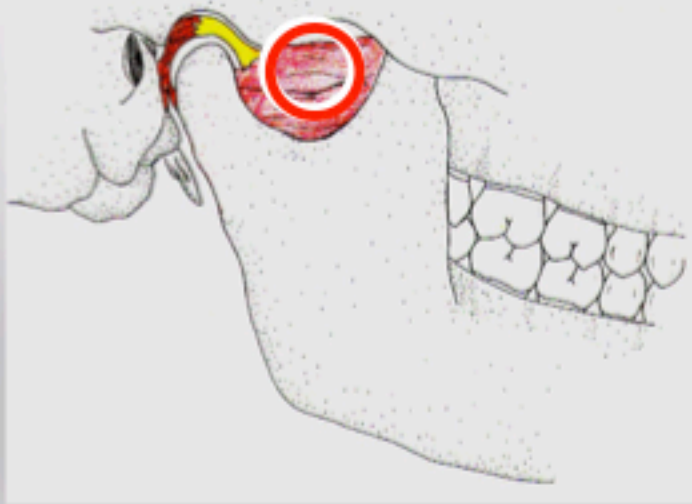
Occlusal Muscle Dysfunction

Signs:
Fractured Cusps
Fremitus
Loose teeth
Periodontal disease



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

Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks for sleep, and occasional daytime

Better- Decrease in Symptoms

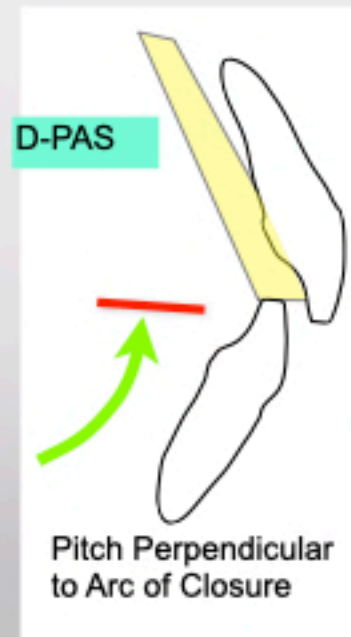
Sleep Clenching Inhibited: Wear D-PAS as night guard
Orthotic Improved Airway: D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

Worse- Increase in Symptoms

Mechanically Unstable TMJ, joint subluxation
Intracapsular Problem TMJ
Orthotic Made Sleep Airway Worse

Stays the Same- No Change in Symptoms

Damaged TMJ are mechanically stable
Pain not related to occlusion

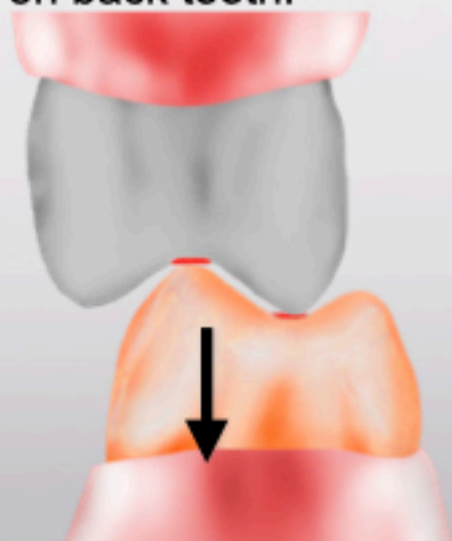


Stapelmann H, Türp JC. The NTI-tss device for the therapy of bruxism, temporomandibular disorders, and headache.....BMC Oral Health. 2008 Jul PMID: 18662411

Ideal Occlusion for Comfortable Muscles

Ideal

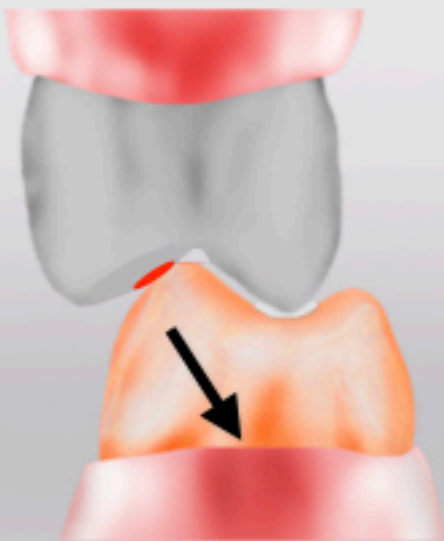
No sideways forces on back teeth.



Sideways forces can fracture teeth

Not Ideal

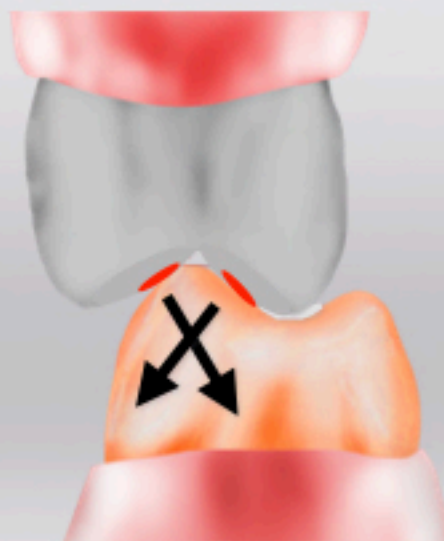
Tense Muscles
Teeth can fracture



Not Ideal

Tense Muscles

Back teeth will have sideways force when the jaw moves left or right.

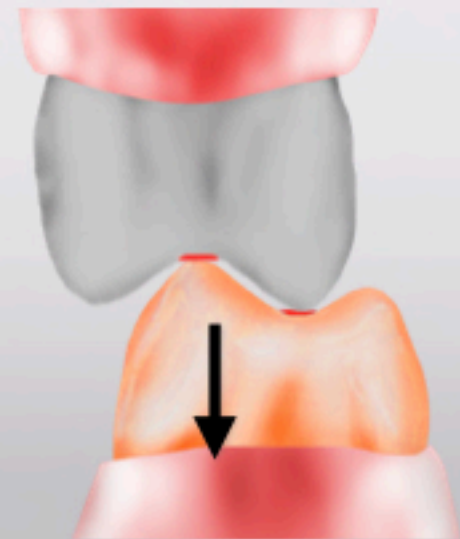


Not Ideal

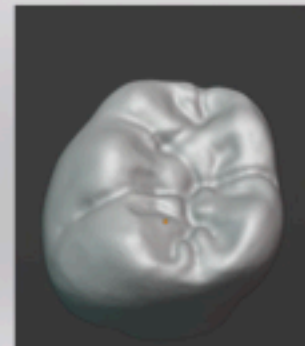
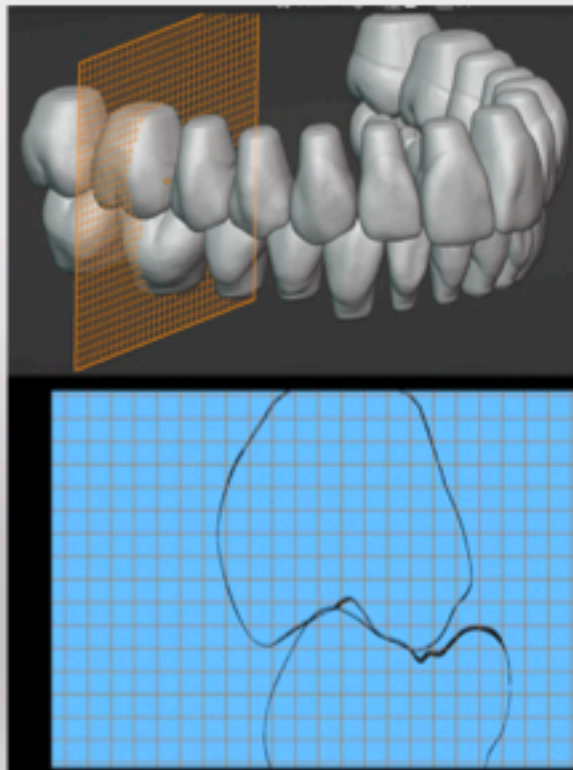
This is now a functionless tooth.
Other teeth now have more force.

Ideal Occlusion

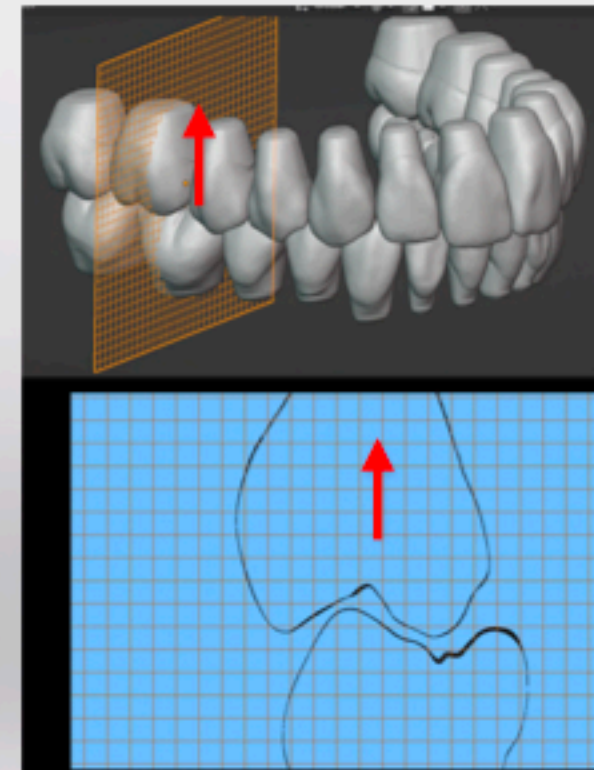
No sideways forces on back teeth.
Comfortable Muscles.



Digital Tooth Libraries Occlusal Contacts on Inclines



Presets on how far out of occlusion to make crown



Occlusal Sculpting

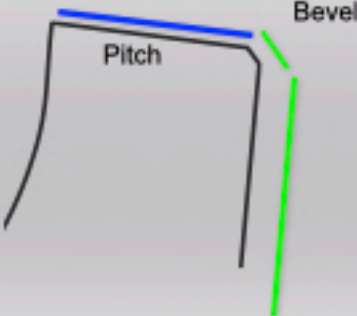
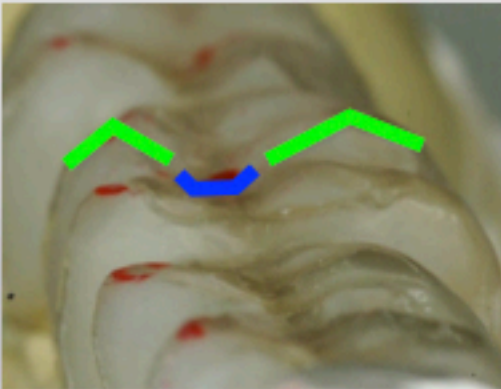
Reshape



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, Albond

Bonding Zirconia, E.max, Porcelain, Gold

Roughen with Diamond

Microtech

Katana Cleaner, Kuraray
Removes phosphates, saliva

Clearfil Ceramic Primer Plus, Kuraray

All Bond, Bisco

Light Cure
Critical step for stronger bond

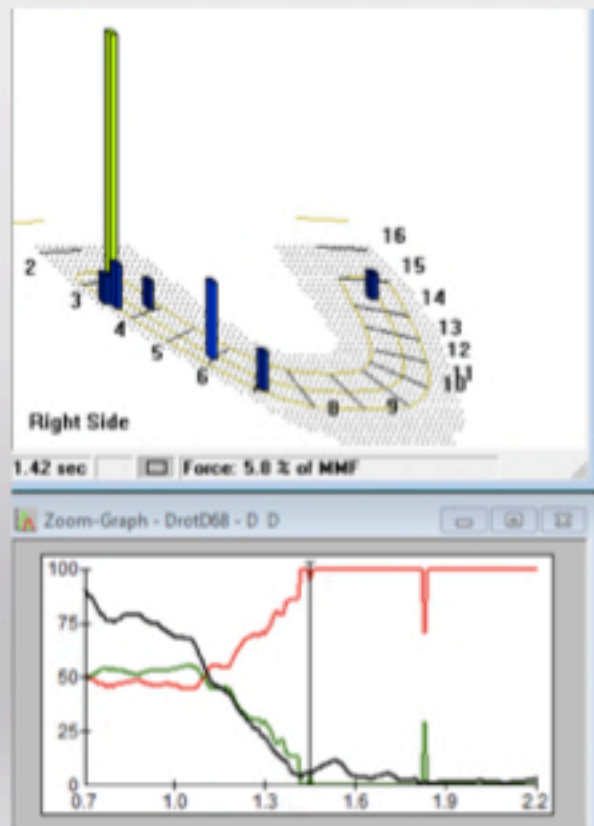
Filtek Composite shade B1B



BruxZir
FULL-STRENGTH
— SOLID ZIRCONIA —

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.

Occlusal Muscle Dysfunction Diagnostic Tests

Occlusal Muscle Dysfunction is a daytime problem

Clenching can be both a daytime and nighttime problem

>30% of headaches have an occlusal component

D-PAS 2 week trial



OR

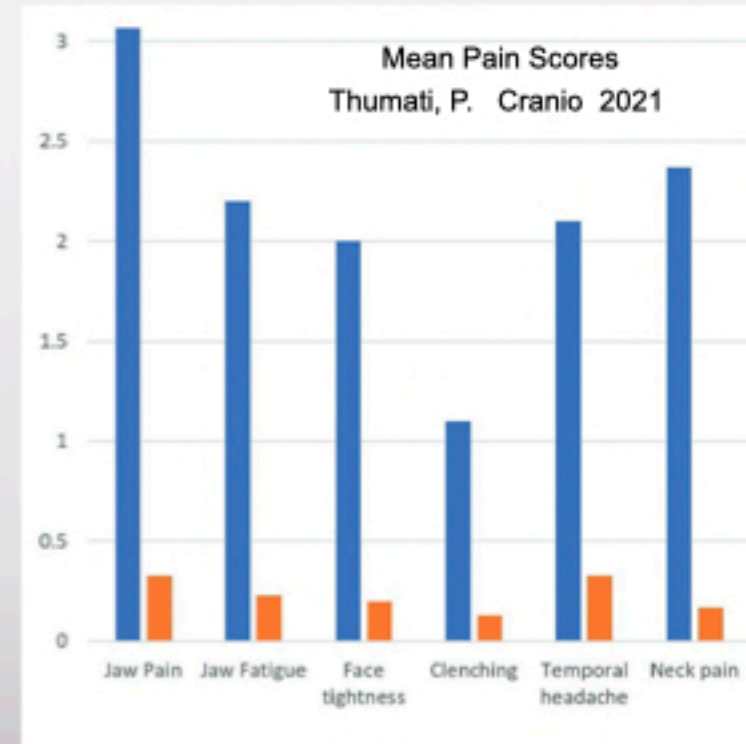
3-6 week lower CR orthotic



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

The best orthotic is no orthotic with teeth adjusted to a disclusion time of less than 400 mSec with T-Scan



Kerstein, RB. Cranio 1995

Treatment of myofascial pain dysfunction syndrome with occlusal therapy to reduce lengthy disclusion time—a recall evaluation.

Thumati, P. J Indian Prosthodont 2016

The effect of disocclusion time-reduction therapy to treat chronic myofascial pain: A single group interventional study with 3 year follow-up of 100 cases.

Thumati, P. Cranio 2021

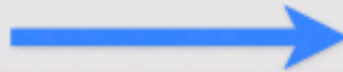
A retrospective five-year survey on the treatment outcome of disclusion time reduction (DTR) therapy in treating temporomandibular dysfunction patients.

Treat Occlusal Muscle Dysfunction- Sculpt the Bite

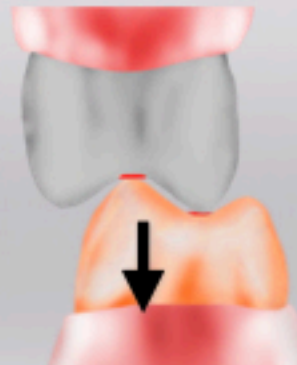
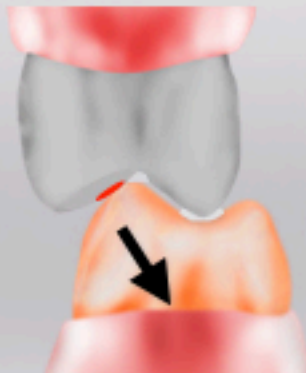


Teeth are reshaped so no sideways forces on back teeth

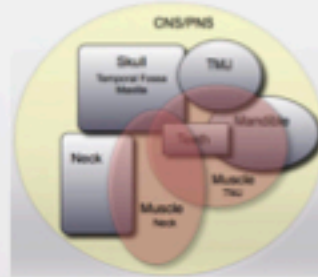
Before



After



LD Pankey Institute, Key Biscayne FL



Facial Pain- What are the choices?

TMD Myofascia as primary source of pain

Occlusal Muscle Imbalance (OMI)

Hypersensitivity: Bracing, Clenching, Avoiding

Sleep Bruxing

Trigeminal Neuralgia Pain

Muscle Spasm

Dysfunction/Dysphagia in movement

Chronic Myalgia

TMD other:

Cervical Damage- Atlas Misalignment

Referred pain from neck muscles

Migraine Headaches- cranial/trigeminal mediated

CRPS/RSD

NECO

Trigeminal Neuralgia

Dystonia

Bell's Palsy

TMD Arthritis as primary source of pain

Physical Damage to Joints & Ligaments

Osteoarthritis

Arterial Necrosis

Trauma Inflammatory Bone Resorption

Rheumatoid Arthritis

Lyme Disease

Joint Infection: Staph, Brep, Syphilis

Compromised Condylar Proliferation

Osteochondritis Dissecans

Fracture/Crush condylar head and fossa

Pontate Arthritis

Crystalline Deposition Diseases

Cancer TM Joint TM Bones

Scleroderma

Symptomatic

Spinal Cord

Non TMD Facial Pain

Cancer: Head, Neck, Central

Craniofacial Disease

Central Mediated Pain

Migraine Headaches: histamine mediated

Infection: Glands, Ear, Teeth, Periodontal

Pulpitis

Pharyngitis

Temporal Arthritis

* This is not a complete listing of all the possibilities

TMD and Oral Facial Pain

June 24-28, 2026

John R Droter, DDS

Ed Zebovitz, DDS

Laura Brescia, DDS

Glen Kidder, DDS

Steve Malone, DDS

Paul Kelly



Class size limited to 24
Call Jackie at (305) 428-5500
www.pankey.org

Learn Occlusal Equilibration

Pankey Essentials Course 1 or

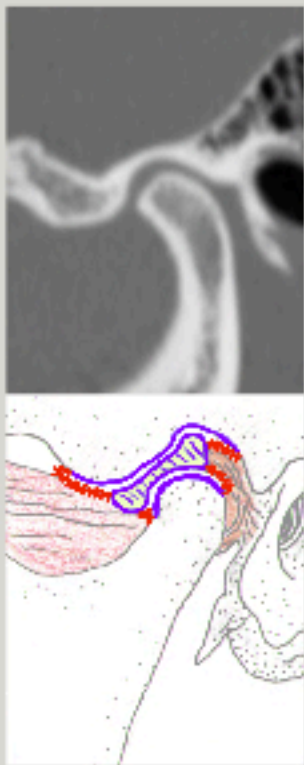
Mastering Equilibration: July 26-28, 2026.

Dr Kevin Muench, DDS

6 Common TMDs

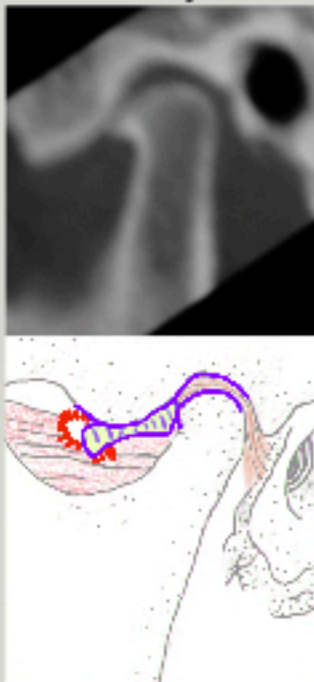
Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium and Vitamin C hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night night guard
Occlusal Muscle Dysfunction	Sore muscles when 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

Normal



Osteoarthrosis/Osteoarthritis

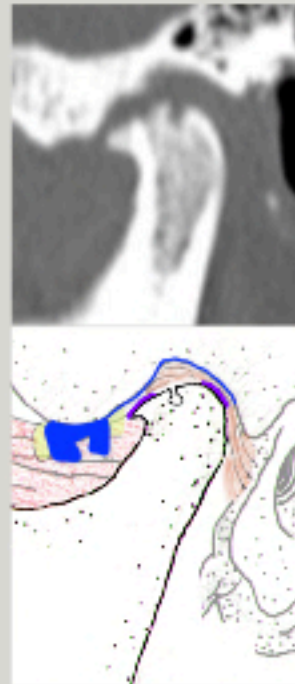
Early



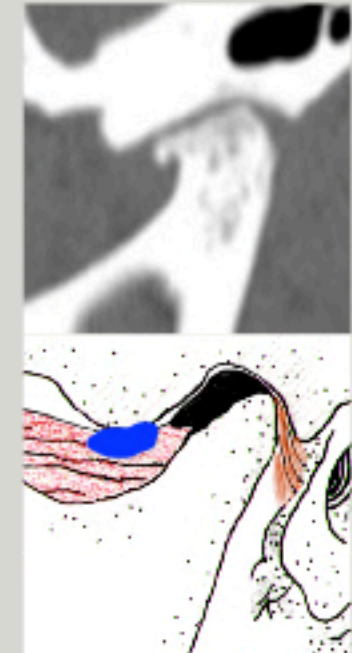
Early/ Moderate



Moderate



Severe OA, Eburnation



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

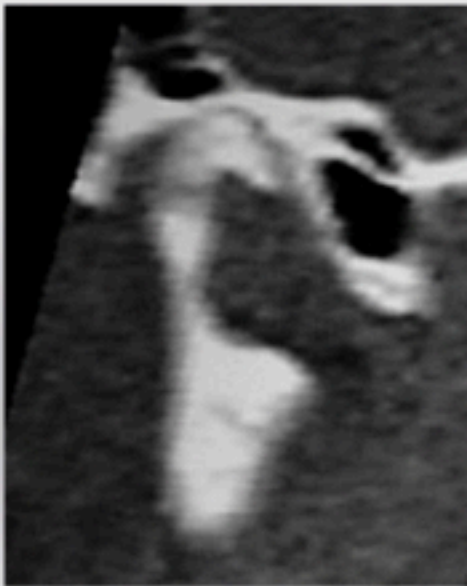
Mandible recedes Slowly

Teeth Move/ Adapt

Anterior Guidance gets steeper as Condylar Guidance get shallower

OA Right and Left Bone Loss

#8 Ankylosed



Treatment/Management OA

Osteoarthrosis

Glucosamine 1500mg /Chondroitin 600 mg per day

Minimize parafunction:

D-PAS

Brux Pas

Posterior stop night guard



Shea Brand CBD

Osteoarthritis

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

NSAIDs for 6+ weeks

Cold Laser

If still inflamed arthrocentesis with
Platelet Rich Plasma (PRP)



MLS Laser
9 sessions over 4 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/Management OA

Osteoarthrosis

Minimize parafunction:

If sleep grinding due to airway:

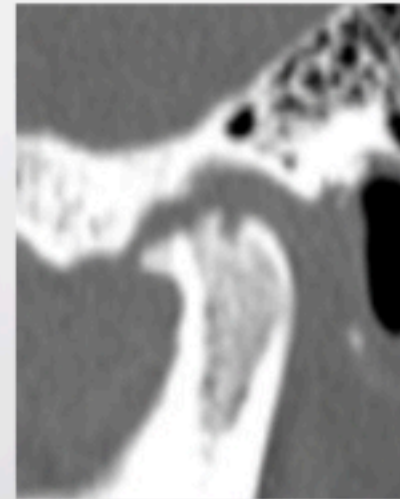
CPAP or Dental Airway Device

Glucosamine 1500mg /Chondroitin 600 mg per day

If still pain in 6 -12 weeks of NSAID:

Arthrocentesis

Platelet Rich Plasma



Osteoarthritis

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

NSAIDs

Cold Laser

If still inflamed arthrocentesis with:

Platelet Rich Plasma (PRP)

Anterior stop

Jaw Movement Exercises



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 and Vitamin C hs
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Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
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Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP

Differential Diagnosis: Limited Joint Motion

Muscle Spasm

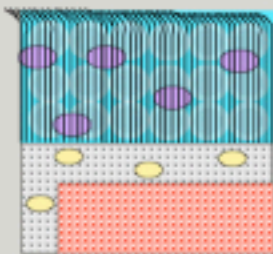
Painful to Move
Joint Pain
Muscle Pain

Mechanically Blocked
4b Acute
Adhesion

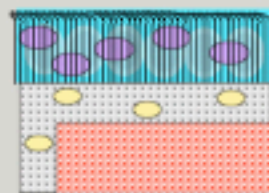
Masseteric Space
Infection
Hematoma



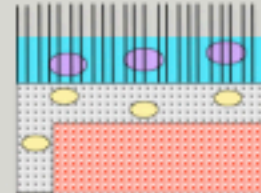
Healthy Cartilage



4 Weeks



8 Weeks



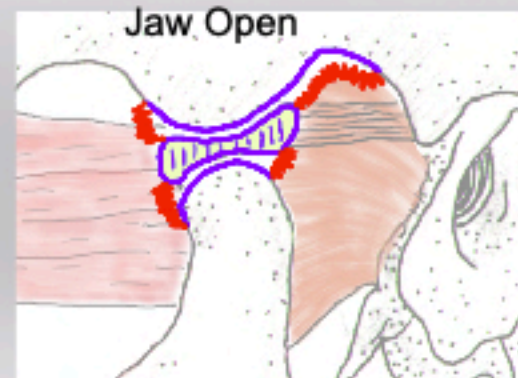
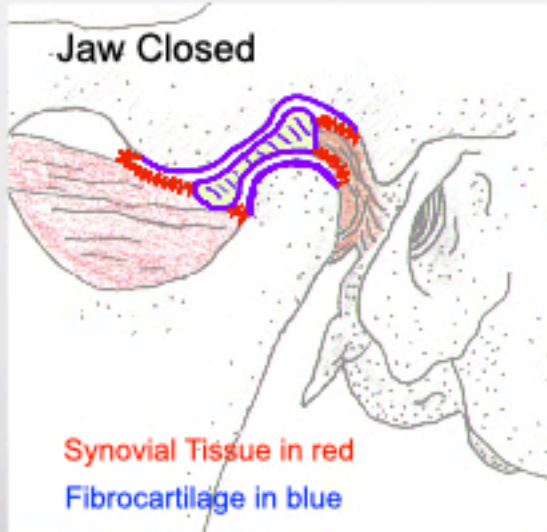
Lose 50% height of cartilage
Proteoglycans not being produced by Chondrocytes
Loss of 50% proteoglycans and water
Collagen still intact
Process is reversible
Move joint with light force/repetitive motion next 30 days

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



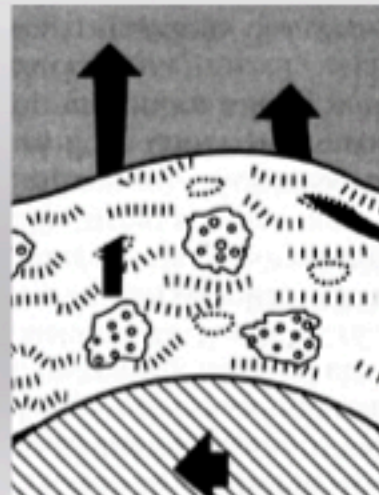
E.B. Evans, GWN Eggers, J.K. Butler, and J. Blumel, Experimental immobilization and remobilization of rat knee joints, J Bone Joint Surg Am, 1960 vol. 42 (5) pp. 737-758
Enneking WF, Horowitz M. The intra-articular effects of immobilization on the human knee. J Bone Joint Surg Am. 1972 Jul;54(5):973-85.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

Normal TMJ- Synovium, Cartilage

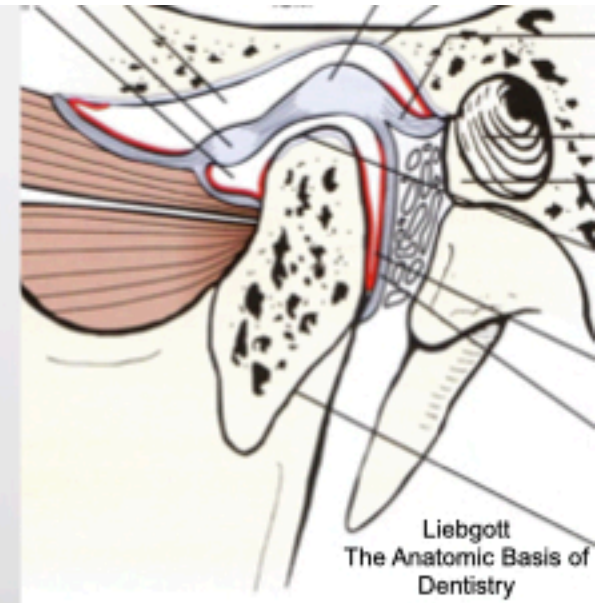


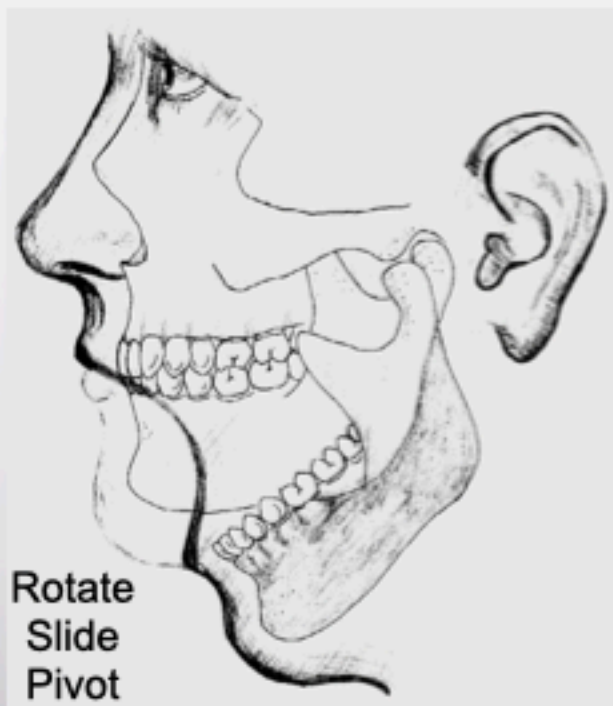
Fibrocartilage-
Slope of Eminence
Disc
Top of Condyle

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





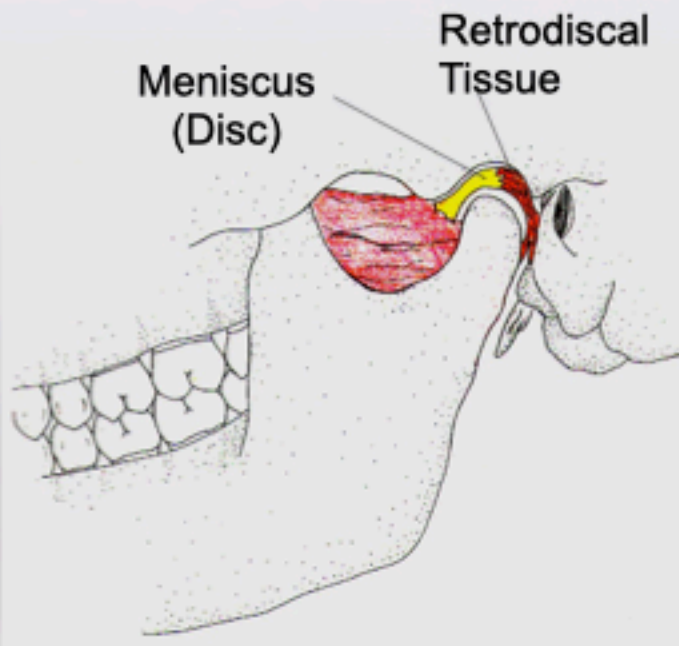
Rotation only 25mm

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



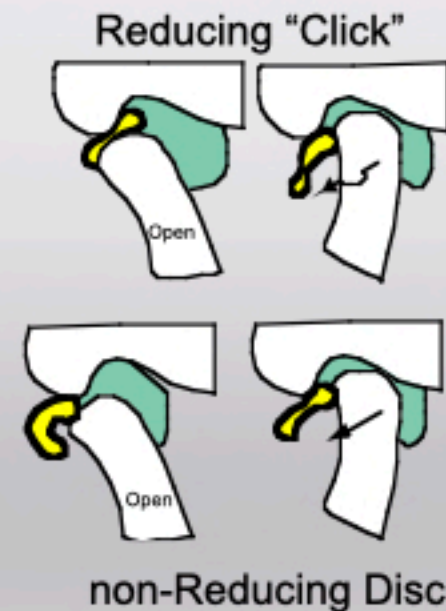
TMJ has 2 Joint Compartments:

Upper- Translation
Lower- Rotation



Acute non-Reducing Disc
Limits Translation.

"Old Adapted" may have
full range of motion.



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:

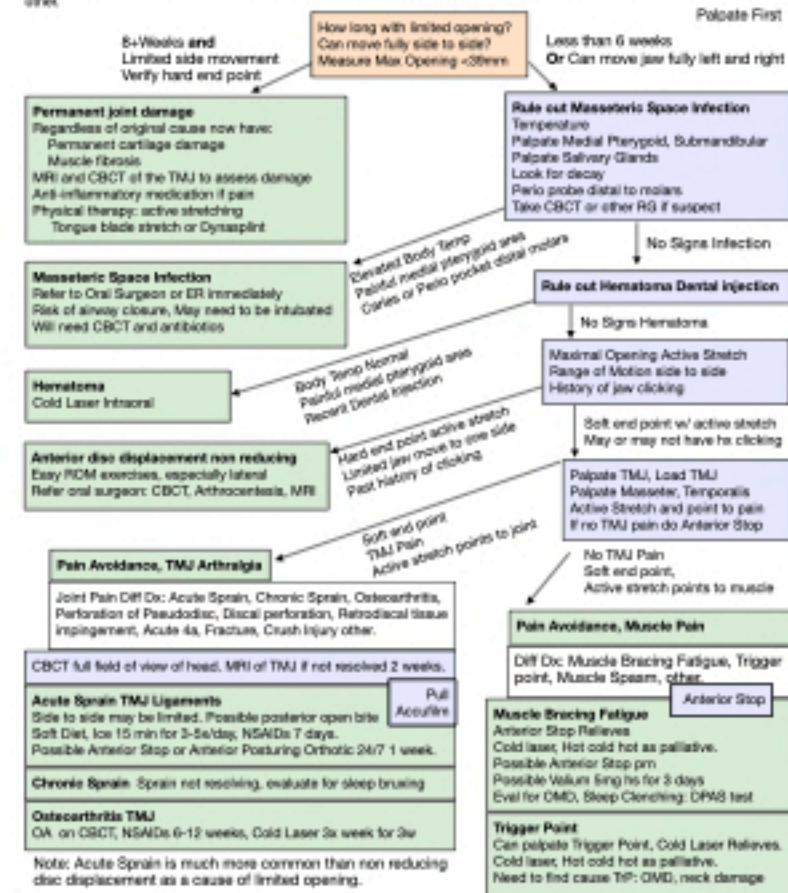
History: How long limited
Body Temperature
Caries Exam, Perio exam
ROM open, side to side
Gentle Active stretch
Point to area of pain
Anterior Stop
If needed CBCT, MRI



Dr Droter's Limited Opening Algorithm

33.2

Differential Diagnosis Limited Opening (Less than 35mm): Pain Avoidance Sore Joint, Pain Avoidance Sore Muscle, Hematoma, Muscle Spasm, Masseteric Space Infection, Nonreducing Disc (4b,3b Acute), Joint Fibrosis, Muscle Fibrosis, other.



Another Case Limited Opening :

Subjective:

Finished Invisalign 1 year ago
Has been clenching her teeth
Months ago jaw started locking in the morning on waking
8 weeks ago pain right jaw joint, could not open all the way
Motrin 800 mg upset stomach

Objective:

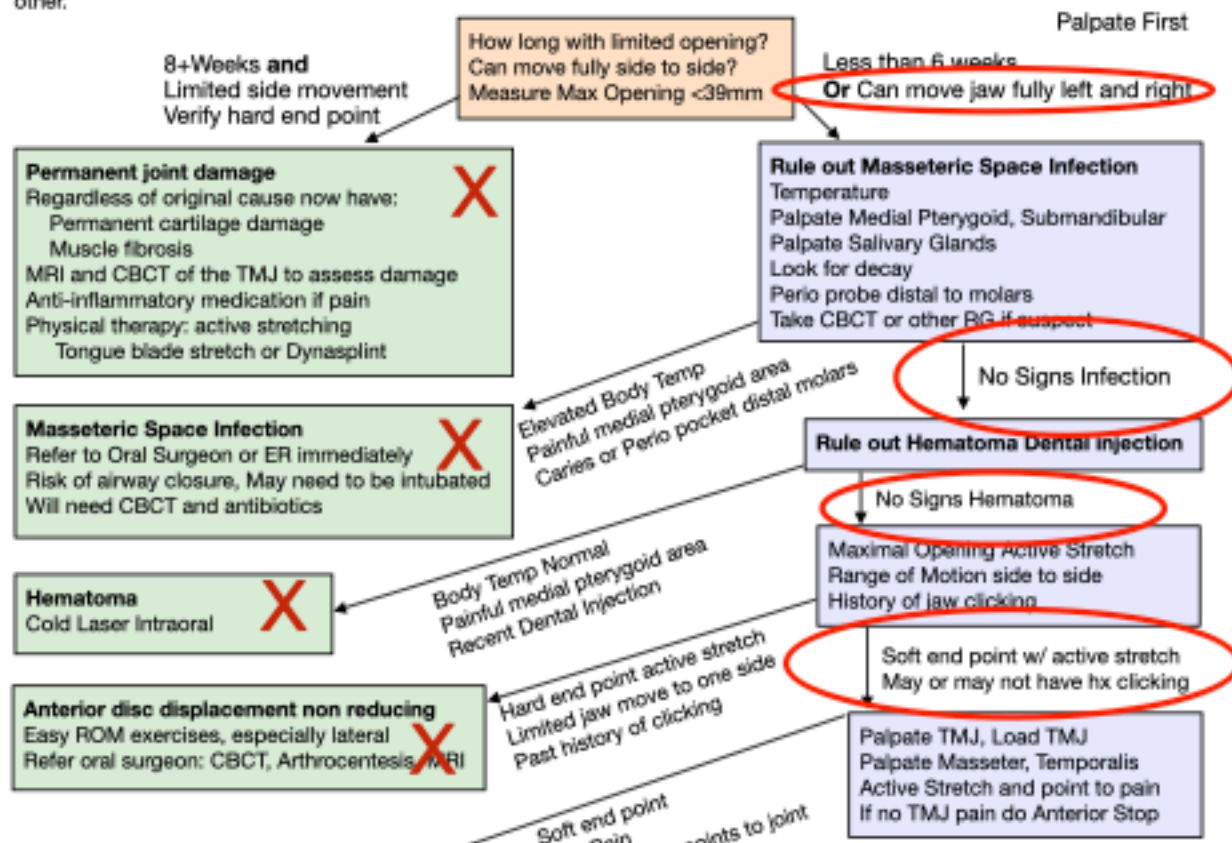
Limited opening 25, Mandible shifts right
Normal side to side motion
98 temp, normal perio probe 2nd molars, no caries
No pain palpation RL Medial Pterygoid
Soft end point on active stretch, 35mm, R TMJ pain
Right TMJ pain to palpation, Left TMJ normal
Posterior cross bite on left



Dr Droter's Limited Opening Algorithm

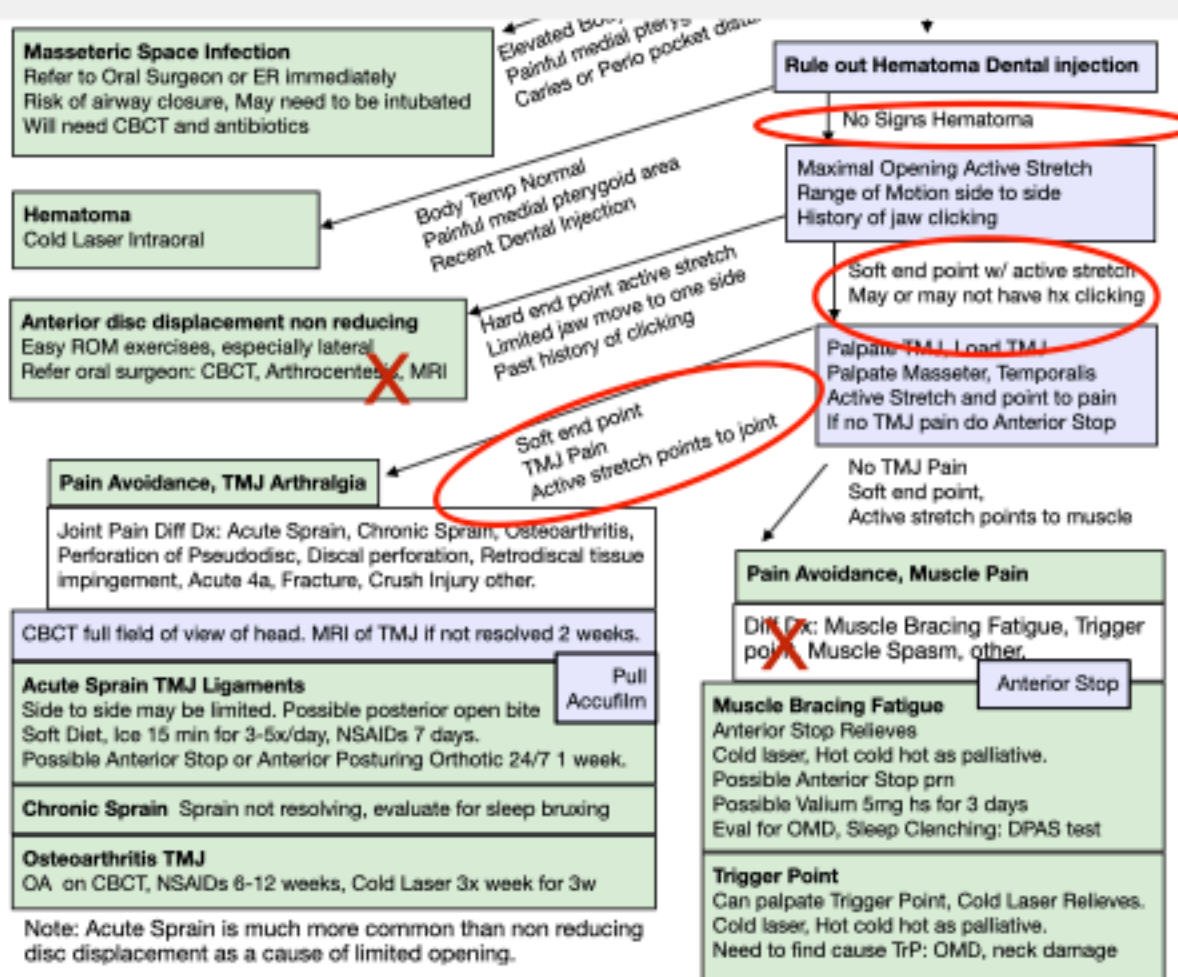
22.3

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



Objective:

Limited opening 25mm, Mandible shifts Left
Normal side to side motion
Normal temp, normal perio probe 2nd molars
No caries
No pain palpation RL Medial Pterygoid
Soft end point on active stretch, 35mm,
with R TMJ pain
Right TMJ pain to palpation, Left TMJ normal



Working Diagnosis:

Acute Sprain Right TMJ Ligaments

Limited opening due to muscle bracing Right TMJ pain

Current Sprain Protocol

We used Advil gel caps
600mg tid with food



Temporary Anterior Stop
ArrowPath Sleep

Soft chew diet

Ice over TMJ 15 minutes 3-5 times a day for 3-5 days,

Ice 2-3x a day for additional 3 days if needed

NSAID: Advil Liquid Gel Caps 200mg, 3 caps 3x a day

or Aleve Liquid Gel Caps 220mg, 1 cap twice a day for 5 days or

Temporary upper Anterior Stop for sleep

Cold Laser 350 hz both joints: 30 seconds open, 30 seconds closed

If still sore in 1 week will need TMJ imaging: CBCT and MRI



ThermoSafe
U-Tek Cold Pack
-23° C

1 layer paper towel



MLS Cold Laser
BioResearch

Treatment Acute Closed Lock

Anterior Stop or D-PAS for 3 weeks

Jaw Movement Exercises 5x day

Left Right 20 reps

Open Close 2 reps

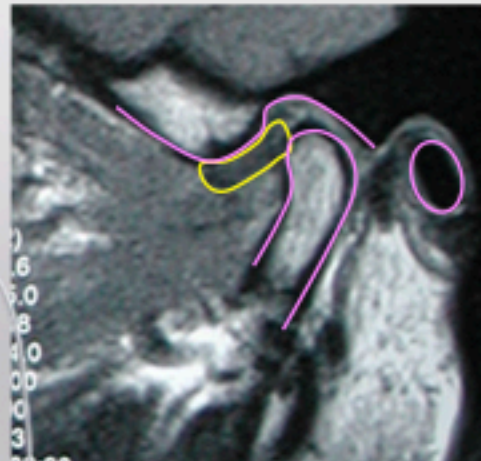
Front Back 2 reps

Left Right 4 reps

Ice 10-15 min 3-5x a day

NSAID

Cold Laser



Verify with MRI

If still locked arthrocentesis with:
Platelet Rich Plasma (PRP)
Anterior stop
Jaw Movement Exercises



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 and Vitamin C hs
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Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
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6 Common TMDs

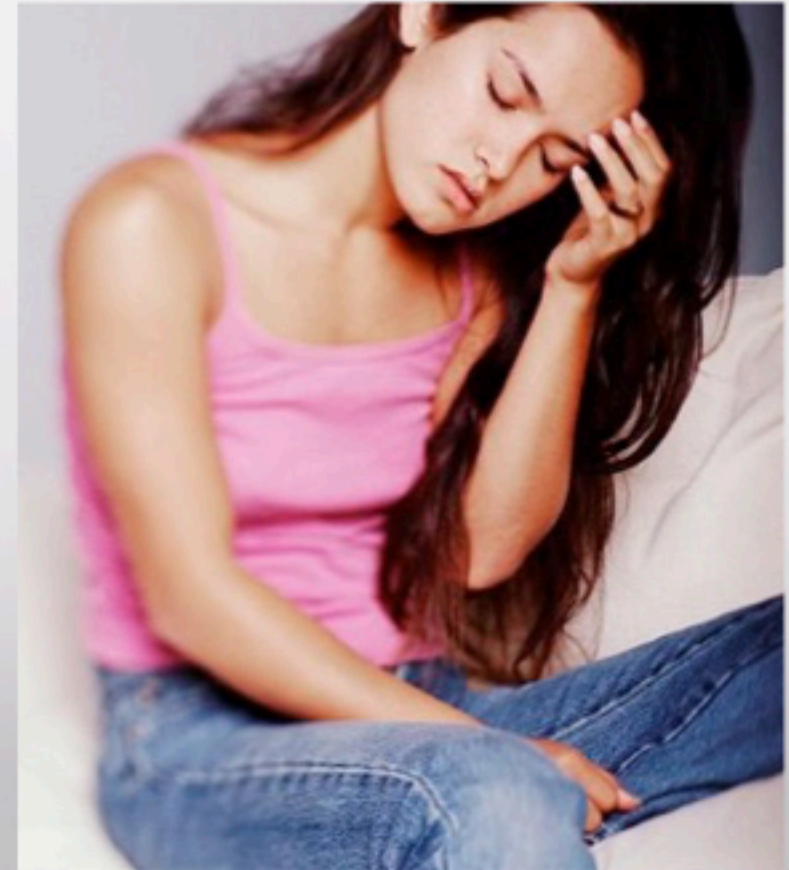
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

5 Common Obstacles

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

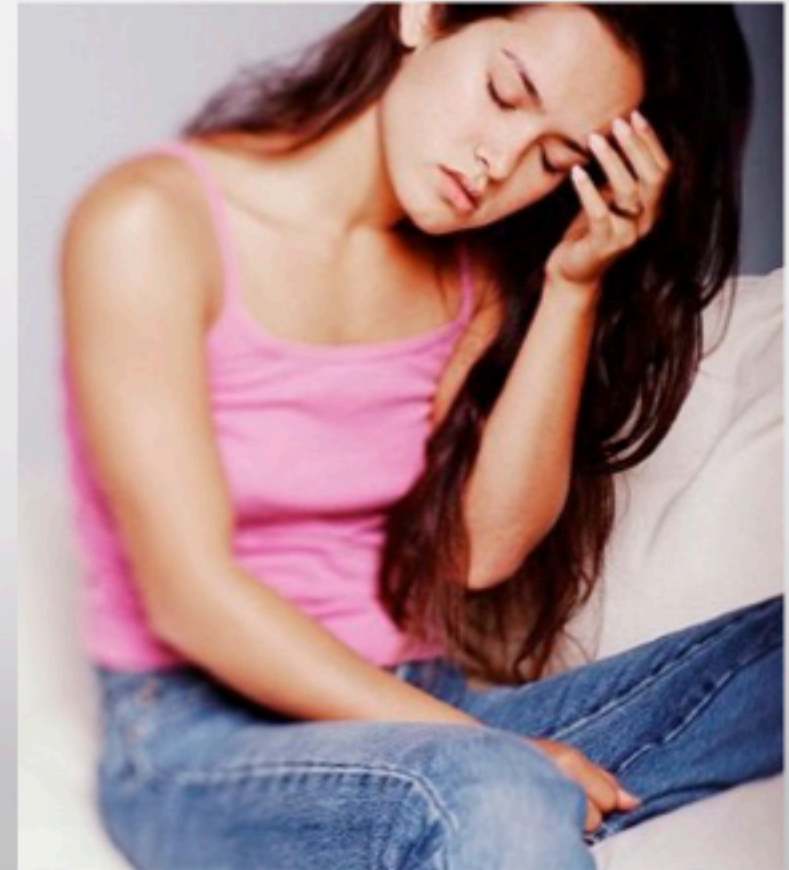
1 TMD that **usually** does not need therapy

- TMJ Clicking



5 Common Obstacles

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



5 Common Obstacles

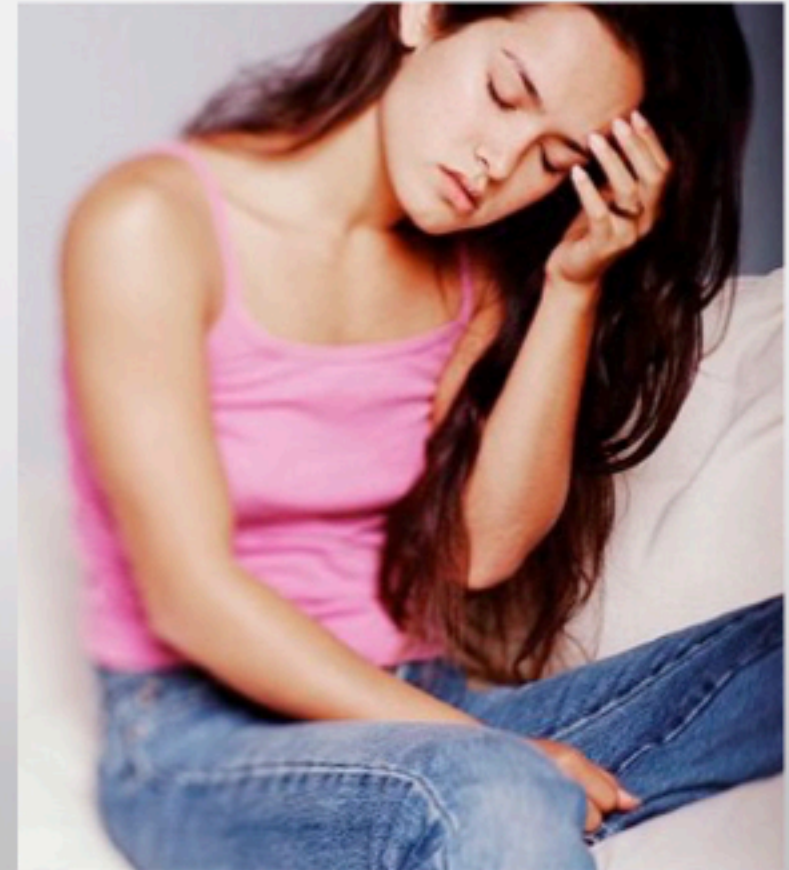
Neck and Postural Instability

Wobbly TM Joint (Subluxation)

Compromised Breathing/Airway

Avascular Necrosis

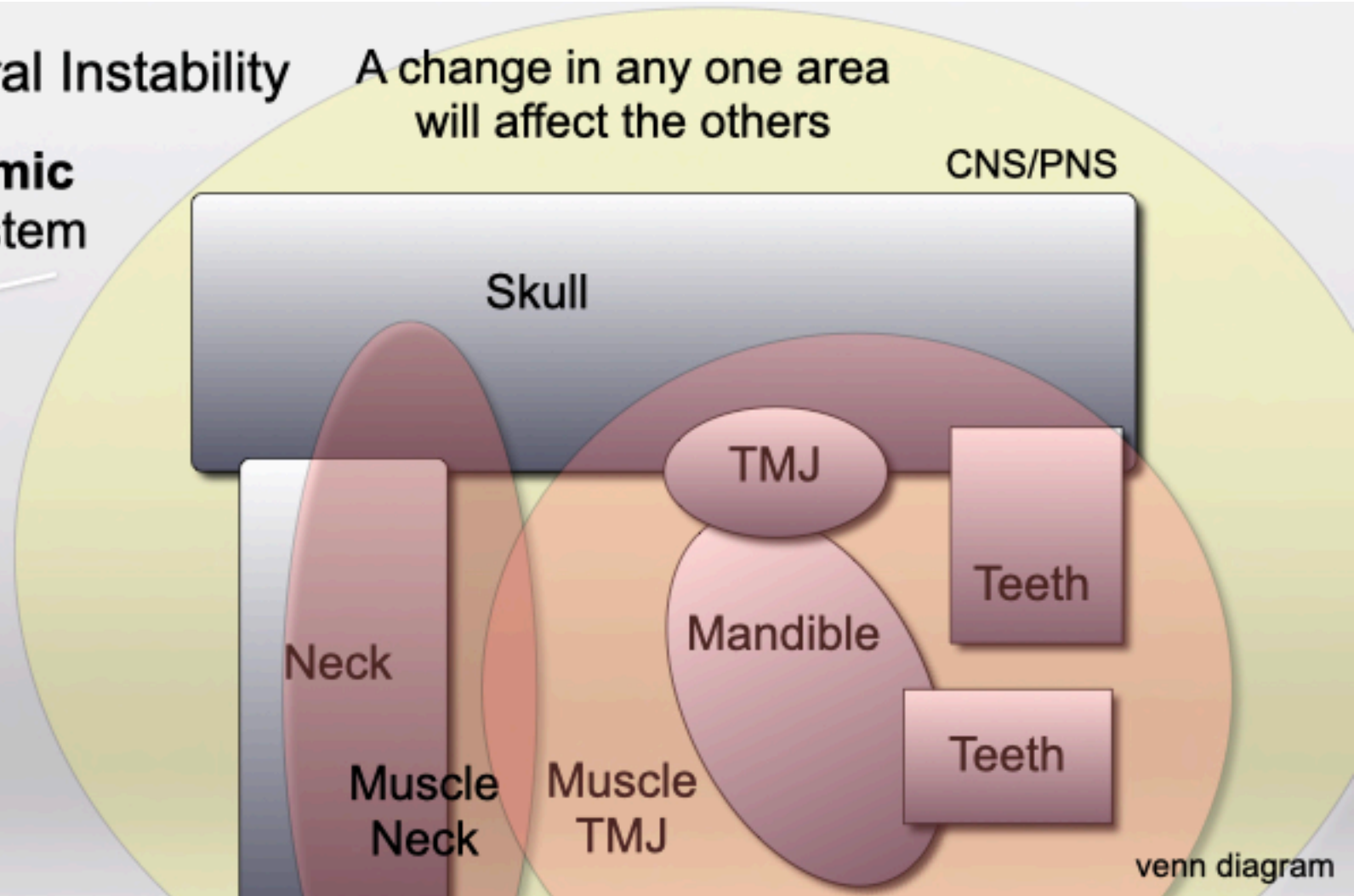
Referred Pain Muscle Triggerpoints



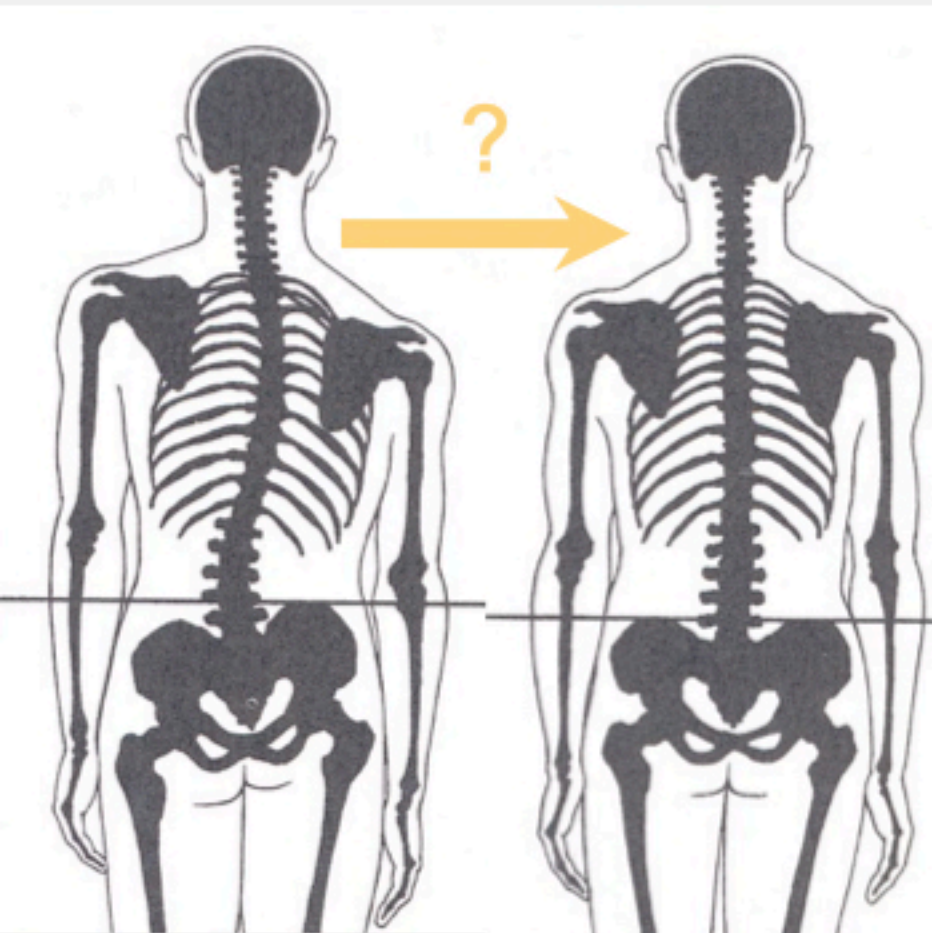
Neck and Postural Instability

A change in any one area
will affect the others

This is a **dynamic**
orthopedic System



How to Rehabilitate?



Define the Problem:

Bones not Stacked

Disproportionate Weak/Strong opposing muscle groups

Causes:

Postural- Habitual, Functional

Pain Avoidance- sore joint, sore muscle

Adaptation from physical damage

Genetics

Treatment:

Eliminate Pain

Mobilize Joints

Stack the bones

Strengthen weak muscle groups

Does stretching and palliatively eliminating TrP fix this?

TMD 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: Postural Restoration Therapy

Refer to Physical Therapy: Various Muscle Therapies

Refer to Physical Therapy: Rocabado mobilization

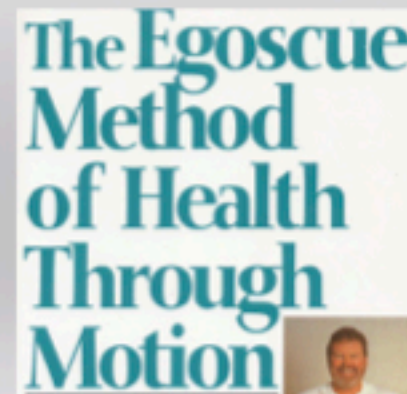
Refer to Chiropractic: Atlas Orthogonist
Refer to Osteopathic MD: Body alignment
Breathe, Walk , Exercise

Postural
Restoration
Therapy



Dr Mariano Rocabado

If no access to professionals.
Do it yourself PT.
Strengthen weak opposing muscles



TMD Therapies

Physical

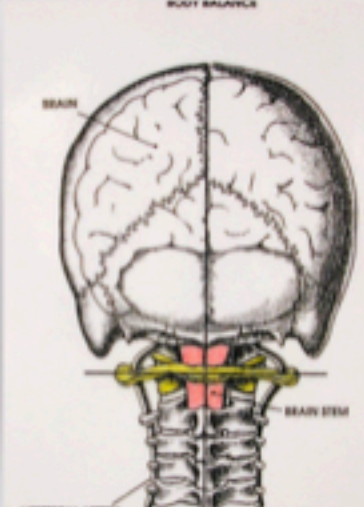
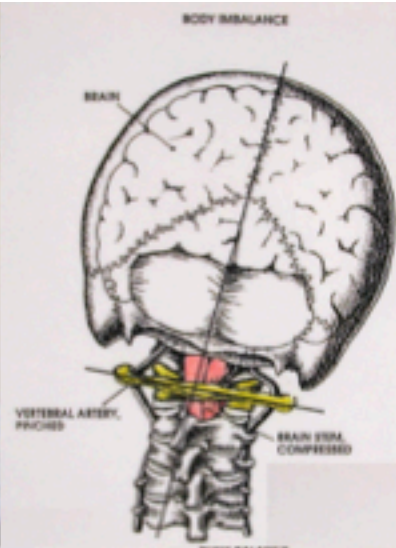
Ice
Hot Cold Hot
Cold Laser
TENS in office
TENS home use
Range of motion exercises
Active Stretching: Manual, Tongue Blades, Dynasplint
Refer to Physical Therapy: Rocabado mobilization
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Refer to Physical Therapy: Various Muscle Therapies

Refer to Chiropractic: Atlas Orthogonist

Refer to Osteopathic DO: Body alignment

Breathe, Walk , Exercise

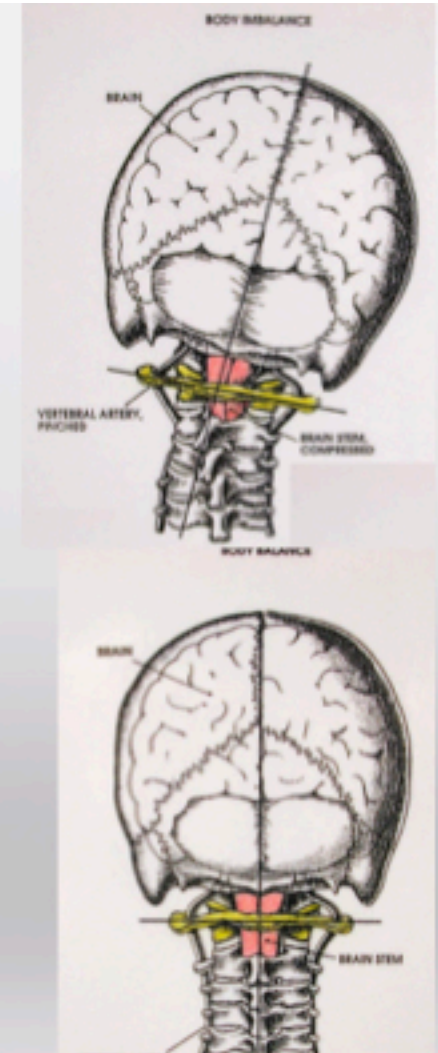
Atlas
Alignment



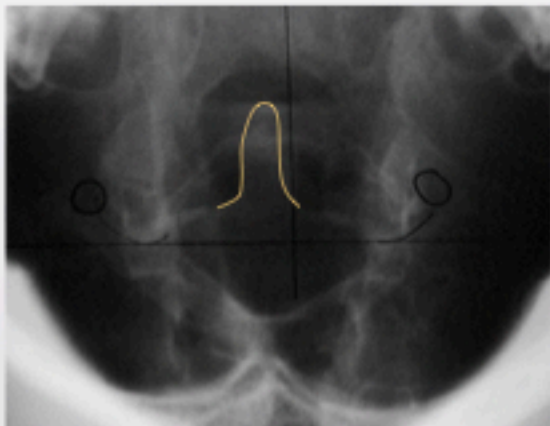
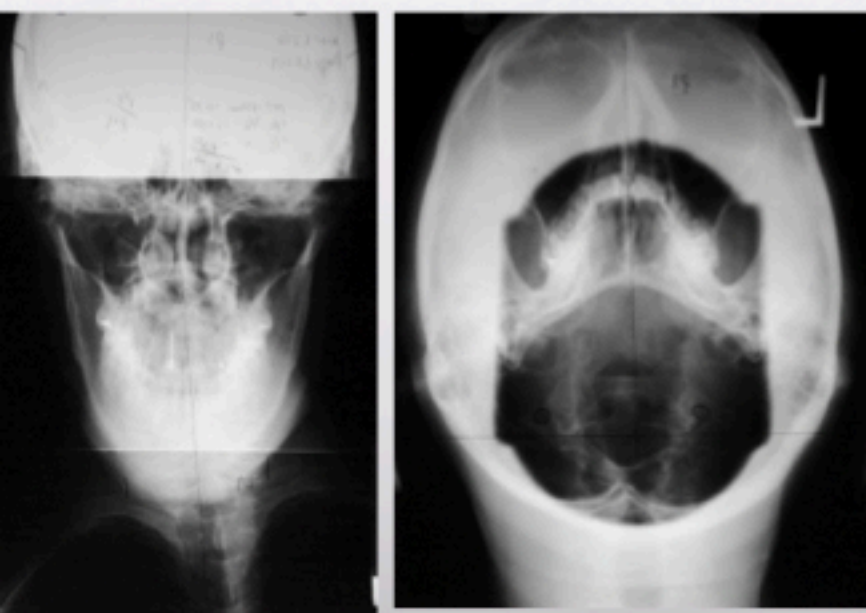
Atlas Orthogonist
Branch of Chiropractic Medicine



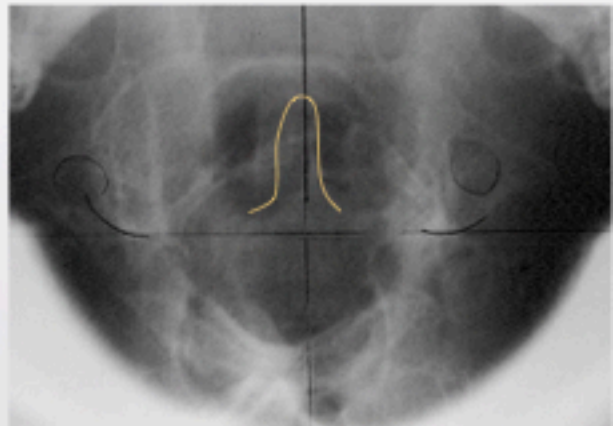
Uses sound wave to move atlas,
disrupts muscle bracing



My Neck



Before Atlas Adjustment



After Atlas Adjustment



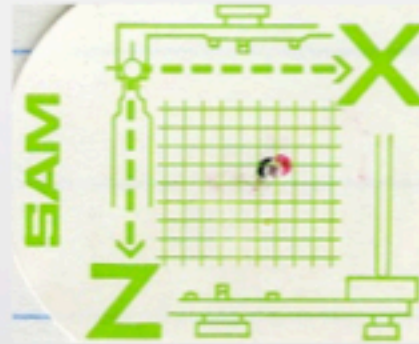
CR Changes with Atlas position

?Pressure on Occiput moves
Temporal bone?

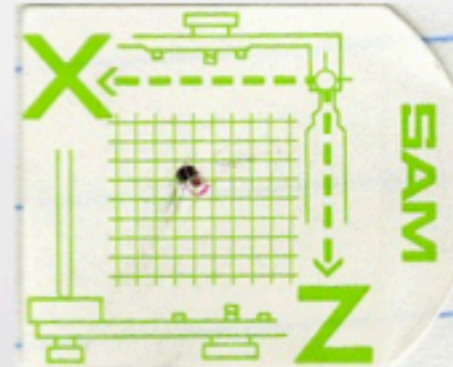
Put your teeth together and bend
neck side to side



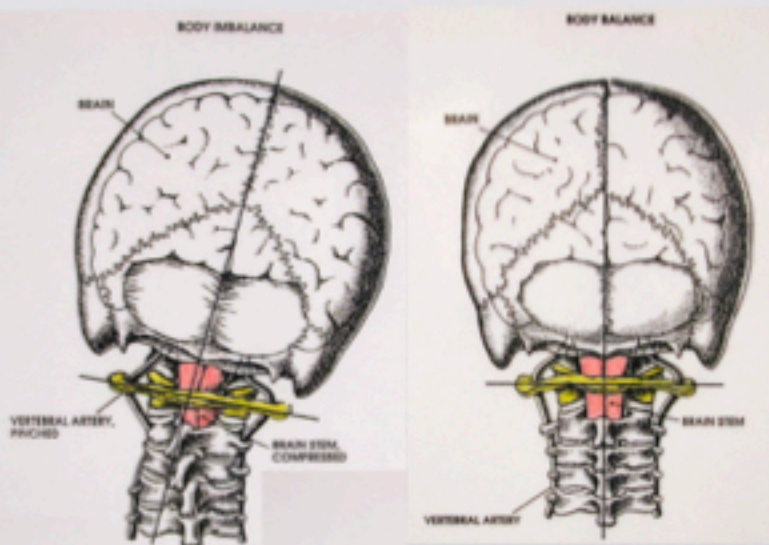
SAM Articulator Vericheck



Right Condyle
Black- Atlas Out
Red- Atlas in shifts
condyle up and
forward 0.6mm



Left Condyle
Black- Atlas Out
Red- Atlas in shifts
condyle down and
back 0.5mm



Postural Restoration Therapist



posturalrestoration.com/

Physical Therapist with additional training

Finding a good Physical Therapist:

- No stretching

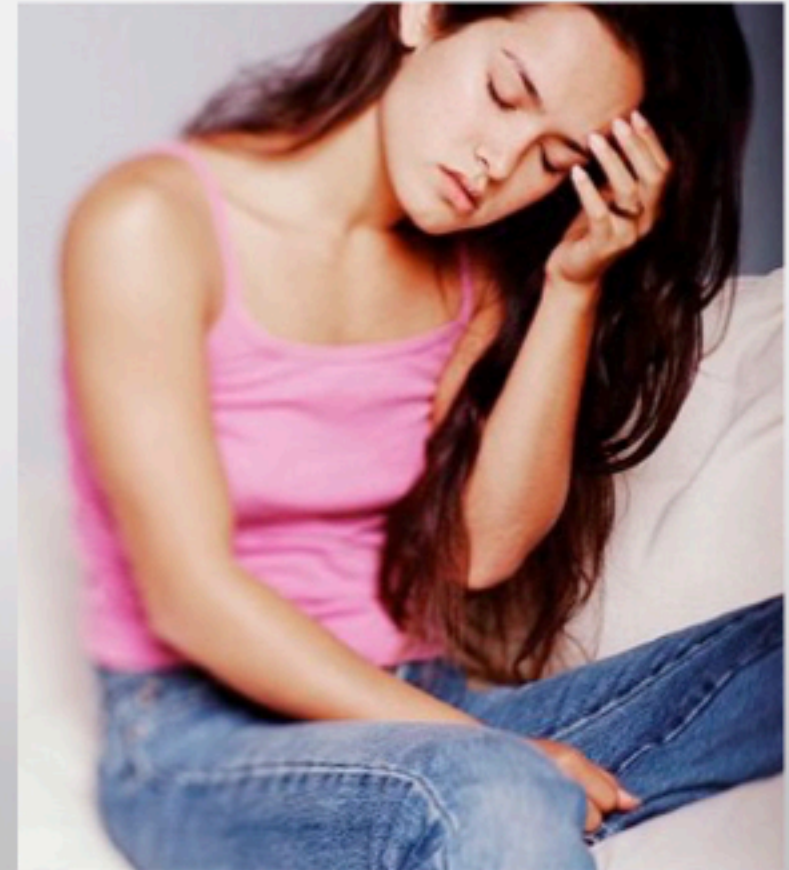
- Breathing Training

- Patient does most of the work



5 Common Obstacles

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



The TMJ: What You need to Know

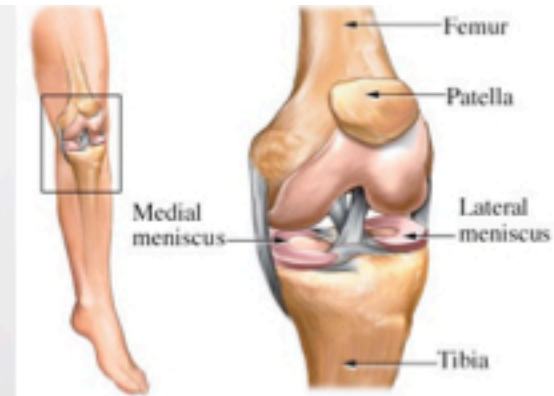
Mechanical Stability ● + - ●

Mechanical Joint Stability

Shape condyle/disc/fossa provides stability when loaded

Capsular Ligaments provide stability when not loaded so pieces will be aligned and ready for loading.

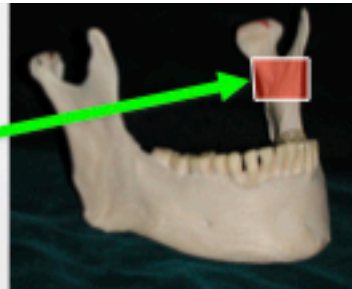
Capsular Ligaments other roles are to provide end point of joint movement and proprioception



CR Load Zone When the masseter fires and seats the joint, where do the condyles load?

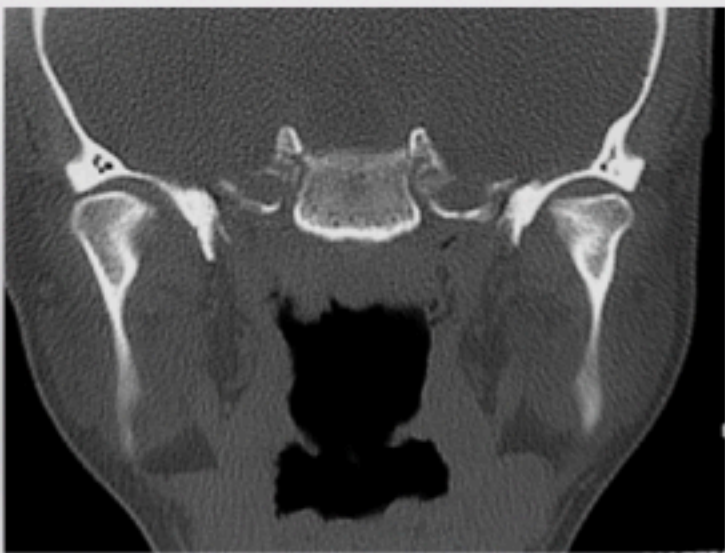
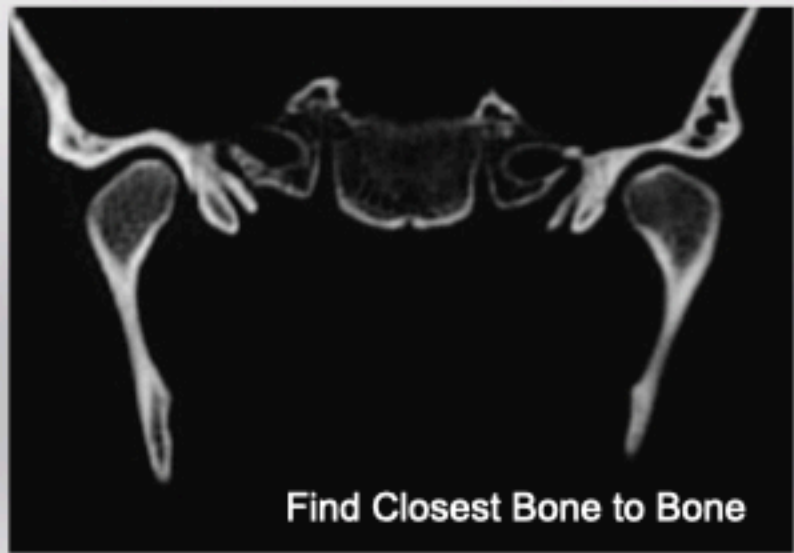


Sore Muscle



Lateral Load right TMJ
This joint can "wobble" side to side
Non-Linear Joint Deformity

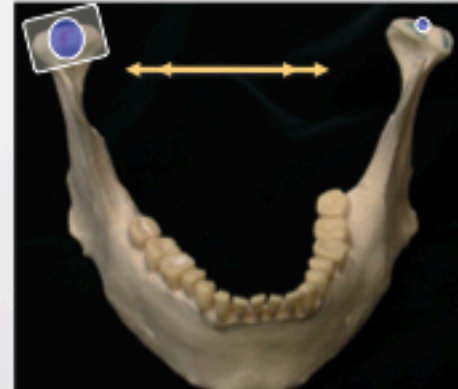
Deep Temporalis runs horizontally
Sphenoid to Inferior Coronoid



Diagnosis: Hypersensitive Bite

Non-Linear Joint Subluxation

There is not a mechanically stable CR load zone.
The joint deforms when loaded



Clinical Presentation:

The deep temporalis will be sore.

Their muscles will not relax with a CR splint.

They will not like an anterior deprogrammer like the D-PAS.

Muscles are braced to stabilize the joint, not to protect from occlusal interferences.

Coronal CT images will show CR load zones that allow side to side movement.

On JVA you will see "wobble" near the tooth tap.

They are dependent on their working and nonworking interferences for some stability.

Do not remove the working and nonworking interferences.

How to Avoid Missing the Diagnosis of Non-Linear Joint Subluxation:

Clinical History- Changes of microns to the teeth affect patients comfort level

Identify CR load zone on CBCT

Anterior deprogrammer test 24/7 for 2 days

Palatal Anterior
Stop Orthotic



Indexed Orthotic



Dentists can inadvertently remove a critical bracing tooth contact with a crown prep or occlusal adjustment

Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks for sleep, and occasional daytime

Better- Decrease in Symptoms

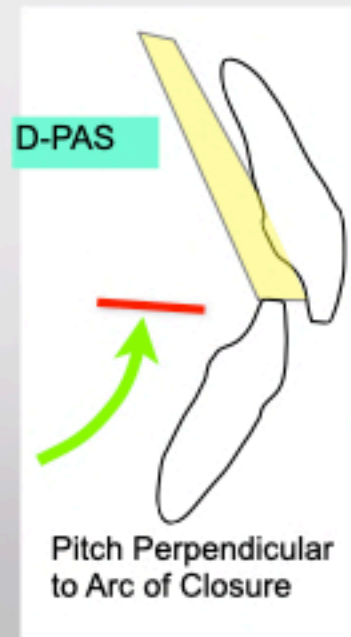
Sleep Clenching Inhibited: Wear D-PAS as night guard
Orthotic Improved Airway: D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

Worse- Increase in Symptoms

Mechanically Unstable TMJ, joint subluxation
Intracapsular Problem TMJ
Orthotic Made Sleep Airway Worse

Stays the Same- No Change in Symptoms

Damaged TMJ are mechanically stable
Pain not related to occlusion



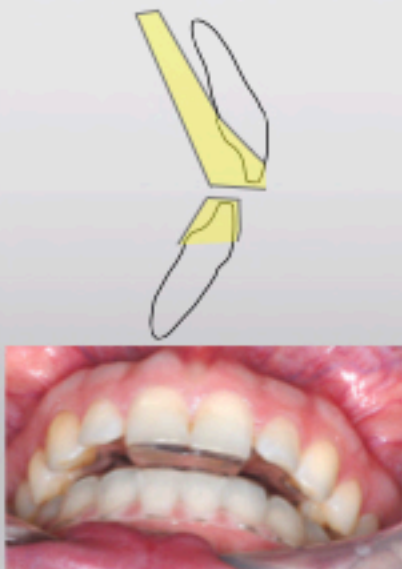
Stapelmann H, Türp JC. The NTI-tss device for the therapy of bruxism, temporomandibular disorders, and headache.....BMC Oral Health. 2008 Jul PMID: 18662411

3D Printed Orthotics

D-PAS
Diagnostic-
Palatal Anterior Stop



Brux-PAS
with lower Essix



Hard Lower Posterior Stop
with upper essix



Hard Lower Full Coverage
Centric Relation Orthotic



5 Common Obstacles

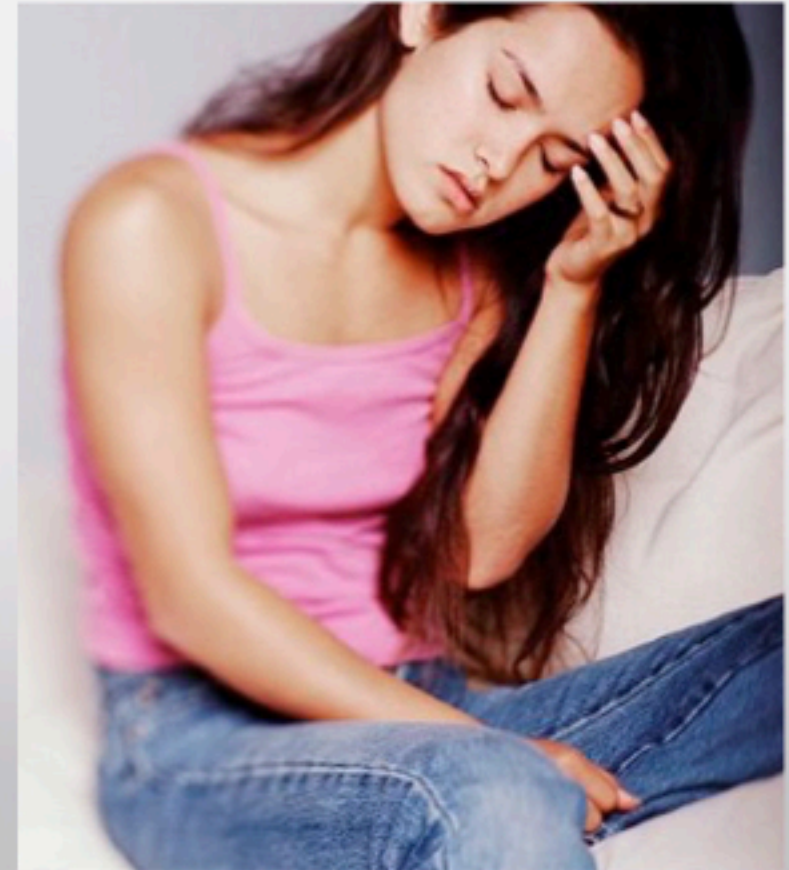
Neck and Postural Instability

Wobbly TM Joint (Subluxation)

Compromised Breathing/Airway

Avascular Necrosis

Referred Pain Muscle Triggerpoints



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
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 Bicupid Extraction	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	Sleep Airway Partial Collapse Signs All of stage 1 and 2 plus.... Upper Airway Resistance 2-4% Drop O ₂ Saturation RERA- Respiratory Arousal Sleep Teeth Grinding ↓ Growth Hormone Symptoms Heart Rate Fluctuation Snoring or "Purring" Weight Gain Cognitive Impairment, ADD Hyperactivity	Sleep Airway Full collapse Signs All of stage 1, 2, 3 plus.... 4%+ drop O ₂ Saturation Apnea Cardiovascular Damage Elevated BP GERD Symptoms All of stage 2, 3 plus.... Worn Teeth

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

Age 19F
cc: Severe jaw pain since
12y/o, Wiggle jaw to open



Patient Safety
Inc Pulse Ox
Sleep Screening



Brux PAS pm wear, jaw exercises

1 week, significant decrease in pain,
much less wiggle to open.



4% RDI = 3/h

Autonomic Arousals **19 /h**

PULSE RATE DATA

Autonomic Arousals

Index (#/hr): 19

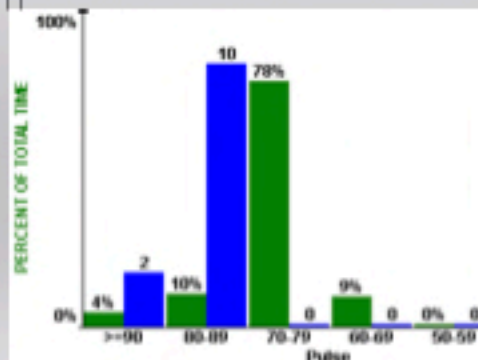
Pulse Rate Range

Mean: 76

Min: 60

Max: 225

76



Brux-PAS



4% RDI = 1/hr

Autonomic Arousals **9 /h**

PULSE RATE DATA

Autonomic Arousals

Index (#/hr): 9

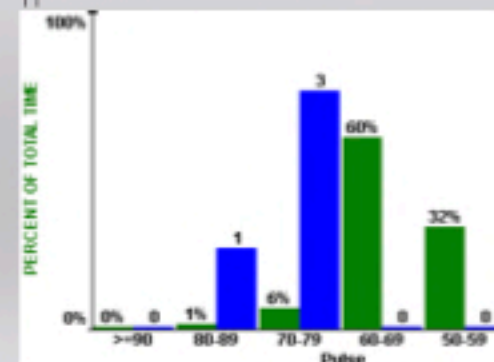
Pulse Rate Range

Mean: 63

Min: 52

Max: 120

63



5 Common Obstacles

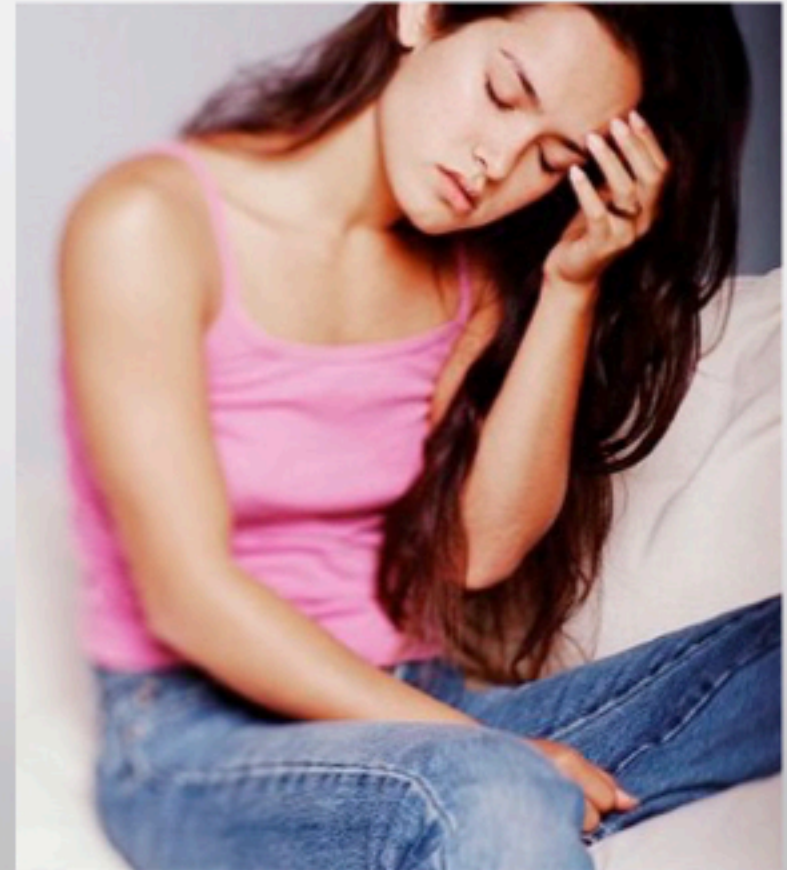
Neck and Postural Instability

Wobbly TM Joint (Subluxation)

Compromised Breathing/Airway

Avascular Necrosis

Referred Pain Muscle Triggerpoints



When the clicking stops (4a to 4b):

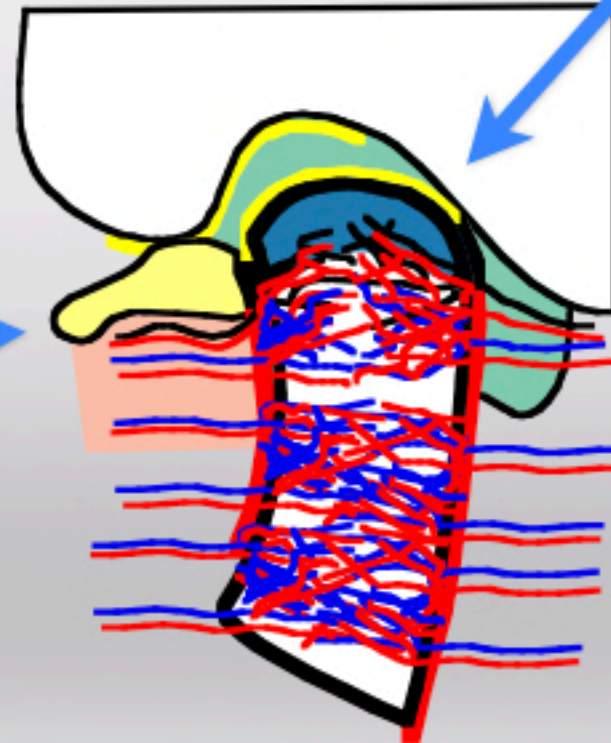
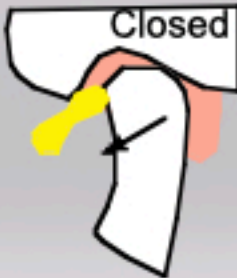
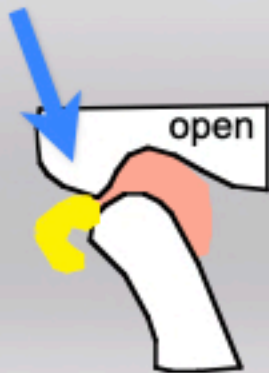
Compromised Condylar Perfusion

Blood flow through condyle is decreased

Disc Anterior

Venous return compromised

Condyle Distalized



3 Outcomes of Compromised Condylar Perfusion



Bone cells die

Avascular Necrosis



or

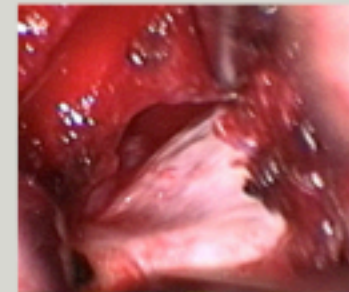
Inflammatory Tissue Bone Resorption

Cortex Collapses, Cartilage tears
Inflamed tissue contacting bone
Inflammatory cells activate Osteoclasts



One and Done

Condyle collapses 1y later.
Cartilage remains intact
Occlusion shifts once, AVN is finished.



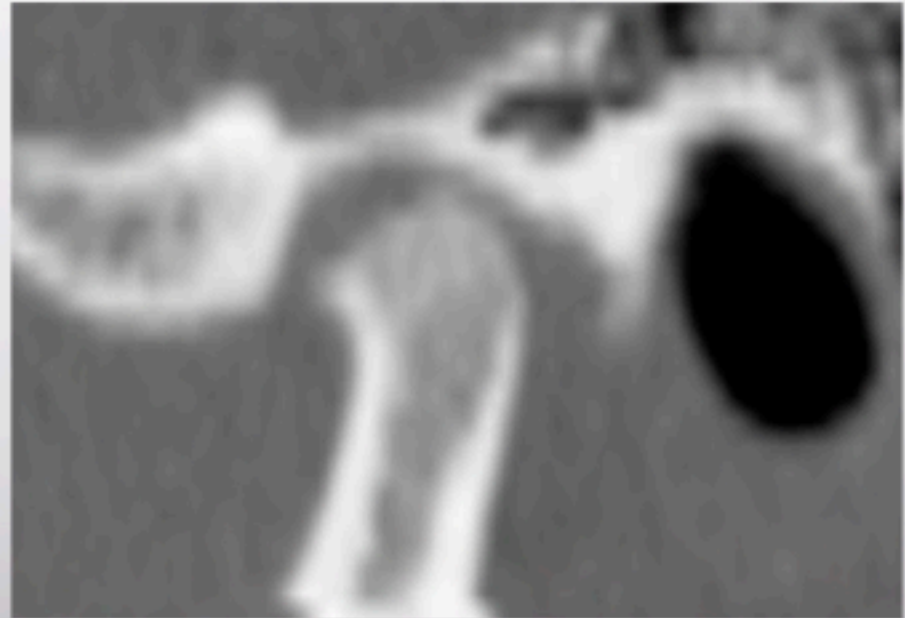
Nothing

Compromised but adequate.
99% patients have no problems

Hypoxia Induced Progressive Condylar Resorption HI-PCR

On CT see Flat condylar surface
Missing Subchondral Cortex During Active Phase
Slow, Progressive Condylar Resorption

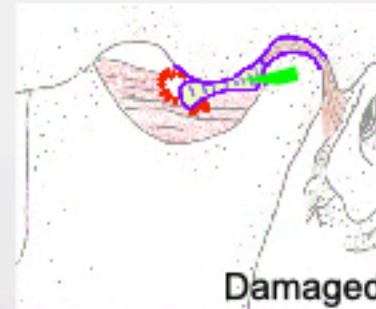
Occlusion will constantly be changing



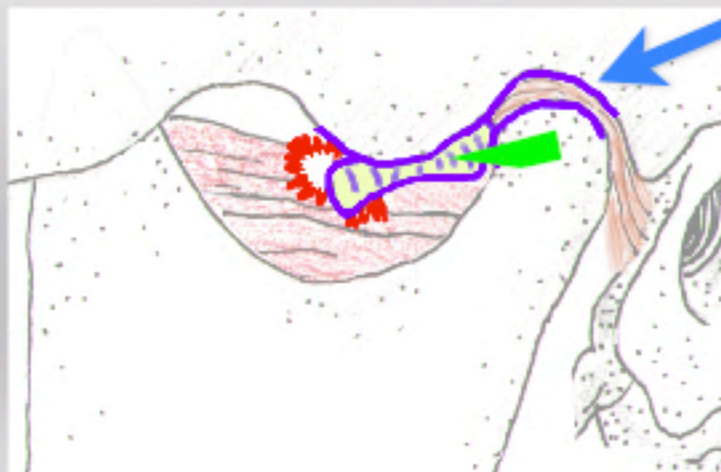
Basic Orthopedics

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

Adult Onset Anterior Open Bite Differential Diagnosis

Developed Post-Puberty



TMJ has changed

- TMJ Bone Loss (See bone loss choices)

- Recent Large Disc Displacement

- Condylar Fracture

Teeth have moved

- Tongue- used as occlusal cushion

- Tongue used to stabilize neck or TMJ

- Iatrogenic- Orthotics, Retainers

Both have loss of anterior coupling

Anterior Openbite with Active TMJ Bone Loss

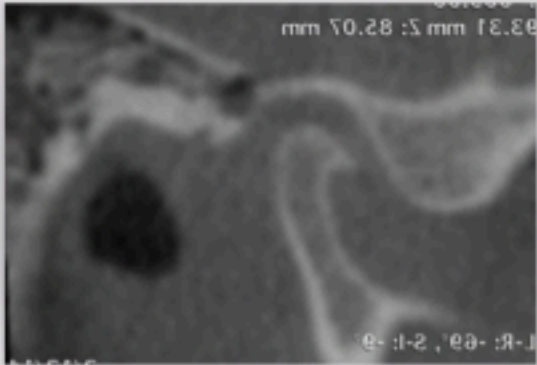
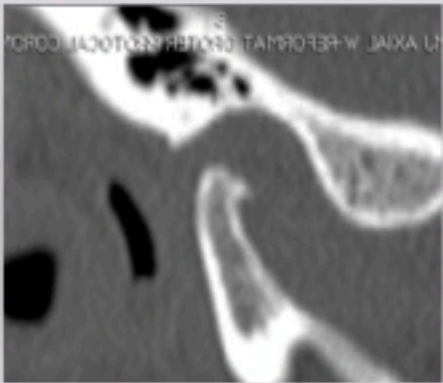
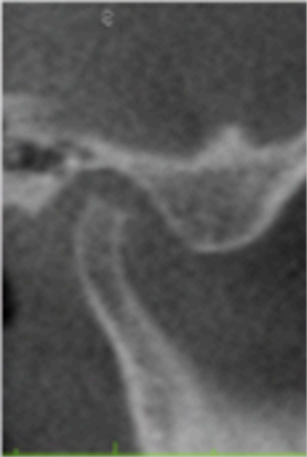
Use articulator to calculate how much distraction: Right condyle down 6.2 mm back 2 mm
Left condyle down 4.5 mm back 2 mm



Condylar Distraction



Ball needs to land in the hole



Anterior Openbite with Active TMJ Bone Loss

Non Surgical Therapies



Condylar Distraction

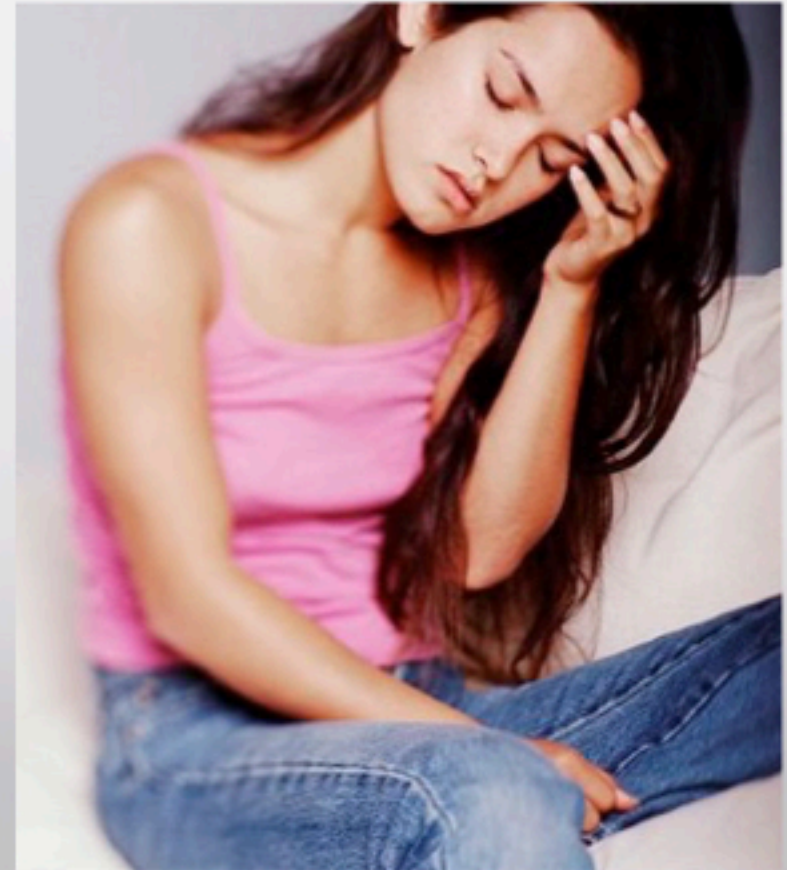


Anti Inflammatory Therapies



5 Common Obstacles

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Referred Pain Muscle Triggerpoints

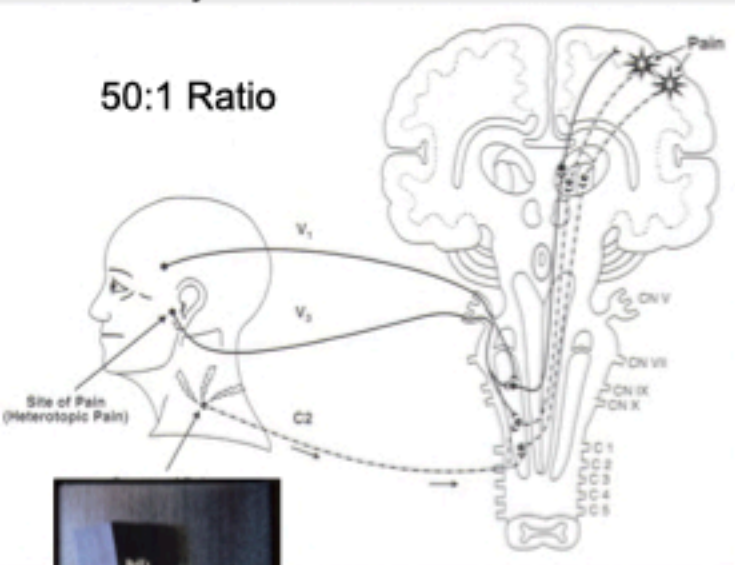


Referred Pain

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

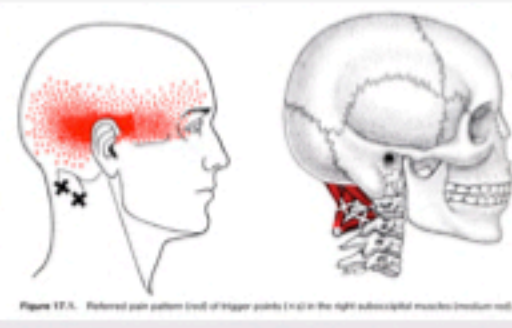
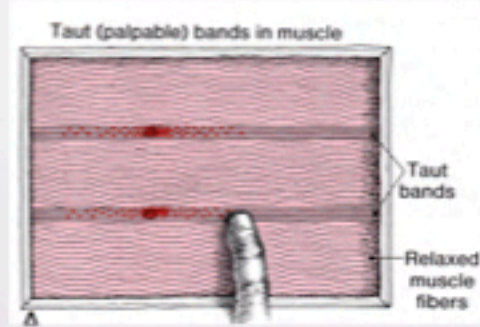
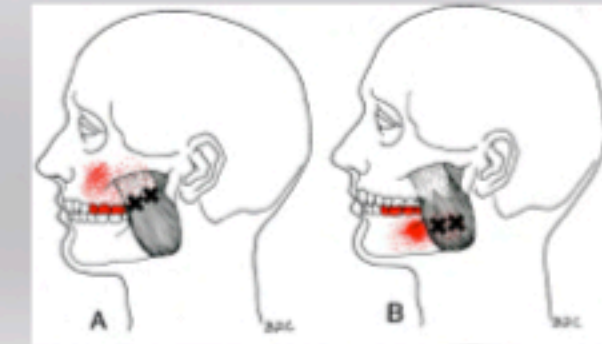
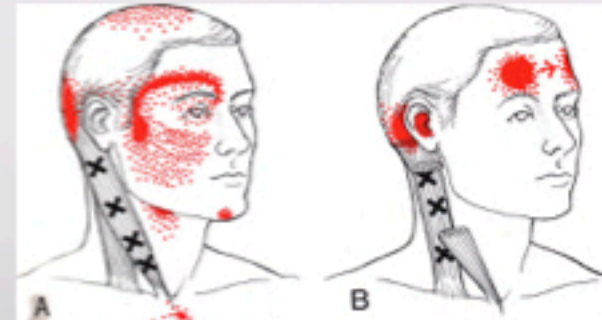
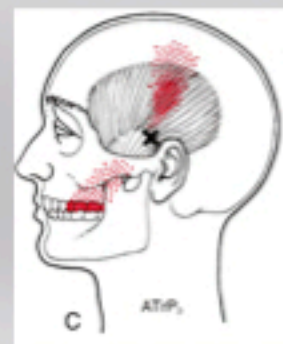
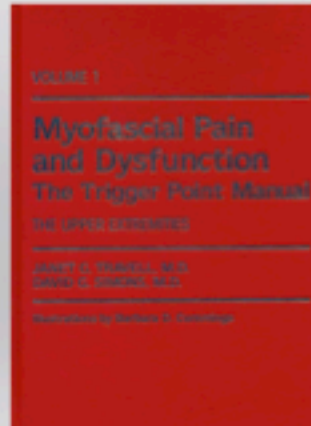


Figure 17.1. Referred pain pattern (red) of trigger points (x) in the right suboccipital muscles (medium red).



"The Trigger Point Manual"
Janet Travell, MD



TMD 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



Ice Pack
15 min 3-5x a day



ThermoSafe
U-Tek Cold Pack
-23° C

Triggerpoint
in muscle



Wet Towel in Microwave
3 Min Hot
3 Min Hot



3 Min Cold



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

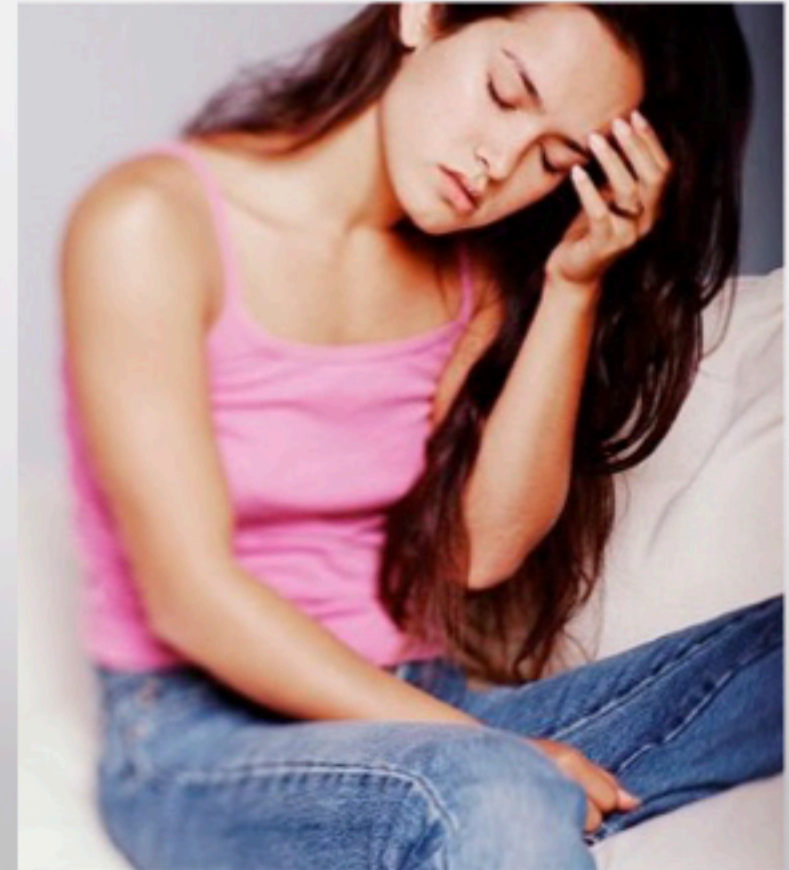


Chung, H., Dai, T., Sharma, S. K., Huang, Y.-Y., Carroll, J. D., & Hamblin, M. R. (2012). The nuts and bolts of low-level laser (light) therapy. *Annals of Biomedical Engineering*, 40(2), 516–533.

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.

5 Common Obstacles

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



6 Common TMDs

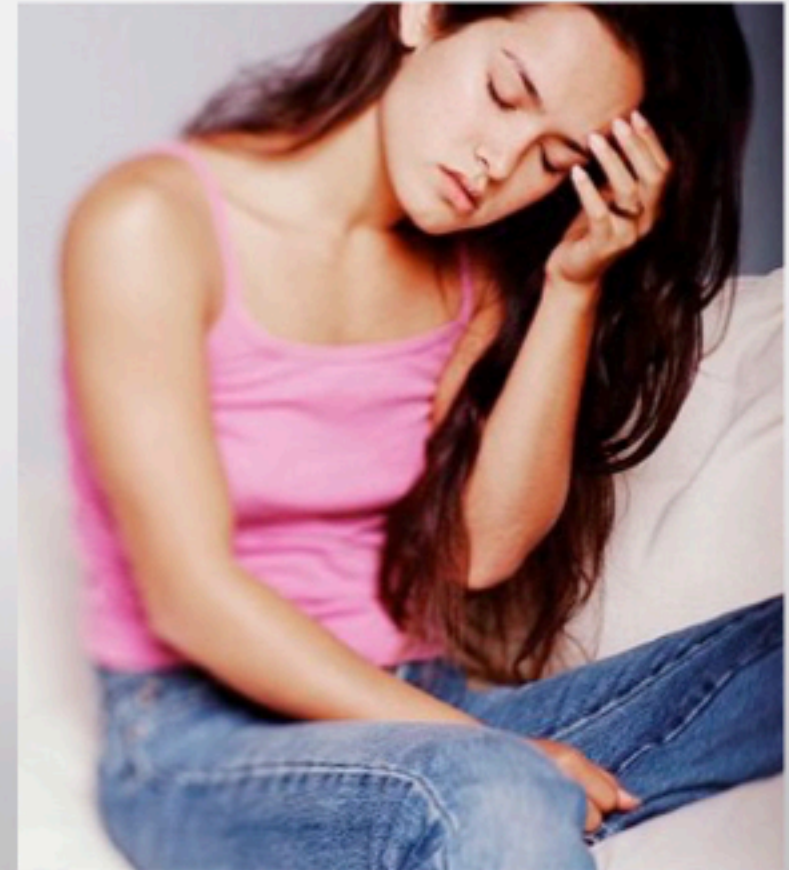
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

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





Know Yourself

Know Your Work



Know Your Patient

Apply Your Knowledge

LD Pankey Institute

Write your Dream

John R. Droter, DDS
drdroter@mac.com
301-805-9400