



Myofascial Pain Dysfunction

Outline

Background & Etiology
Exam Process
Differential Diagnosis
Treatment
Summary

Background & Etiology

Myofascial pain is the most commonly reported type of masticatory muscle disorder as well as the most common type of temporomandibular disorder (TMD)
Laskin, Greene, Hylander 2006

Rosenstiel, Land, Fujimoto

- "Myofascial pain dysfunction (MPD) syndrome presents as a diffuse unilateral pain in the preauricular area, with muscle tenderness, clicking, or popping noises in the contralateral TMJ and limitation of jaw function."

Three most Common Conditions: TMD

- Myofascial pain and dysfunction (MPD)
- Symptomatic disc derangements of the TMJ
- Painful inflammatory and degenerative conditions of the TMJ

- "...with the exception of the traumatic etiologies...the exact causes of most TMDs remain either largely unknown or speculative."

- Dr. Charles Greene, 2006

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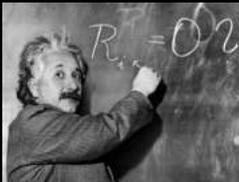
Semantics of orofacial pain "Etiology"

- Location = Where does the patient feel pain?
- Source of pain = Where does the pain originate?
- Mechanism of pain = What is the pathophysiologic process?
 - Primary = inflammatory, neuropathic, myofascial, vascular
 - Secondary = Neuroplasticity = heterotopic and referred pain
- Cause = Why = What is the etiology or pathogenesis of the pain?



Three Main Theories Etiology

- Psychophysiologic Theory
- Muscle Theory
- Mechanical Displacement Theory



Etiologic Theories

- First from the otolaryngologist to dentist = 1930's
- J.B. Costen established the TMJ as a separate source of facial pain and about 11 other symptoms.
- Coston JB. A syndrome of ear and sinus symptoms dependent upon disturbed function of the temporomandibular joint. Ann Otol Rhinol Laryngol. 1934;4:3:1-15.



Etiologic Theories

- Orthodontic concepts
- Developed its own version of structural disharmony concepts as the basis for TMD problems and corrective treatments were proposed
- Recently converged considerably toward the traditional prosthodontic/occlusal viewpoints
- Roth RH. Temporomandibular pain-dysfunction and occlusal relationships. Angle Orthod 1973; 43: 136-153

Etiologic Theories

- Structural Concepts
- Physical therapists, chiropractors and dentists
- Notion of "bad" craniocervical relationships may cause certain TMDs.



Etiologic Theories

- Laskin's Classic Article
- Psychophysiologic Etiology for Myofascial Pain
- Laskin DM. Etiology of the pain-dysfunction syndrome. J Am Dent Assoc. 1969; 79: 147-153.



Etiologic Theories

- Trauma
- Micro and Macro Levels
- Large patient population studies
- Relationship of onset of the symptoms
- Seligman, Pullinger 1991
- Carlsson, Droukas 1984



Etiologic Theories

- Mental Stress
- In mental stress provocation studies TMD/MPD patients differed from normal subjects in many of their responses and several psychophysical measurement studies demonstrated other significant physiologic differences between the groups.
- Mercuri, Olson, Laskin 1979; Malow, Grimm, Olson 1980, Curran, Carlson, Okeson 1996; Fillingim, Maixner, Kindaid, Sigurdsson, 1996; Flor, Birbaumer, Schulte, Roos 1991; Kapel, Glaros, McGlynn, 1989



Etiologic Theories

- Unorthodox and Pseudoscientific Theories
 - Nutritional theories
 - TMJ malalignment causes whole-body symptoms: Gelb 1977
 - Neuromuscular imbalance in the face causes widespread problems with other muscles and even in various organs: Goodheart 1976

Etiologic Theories

- Hybrid Theories
 - Ramfjord and Ash: 1983
 - Combination of stress and occlusal disharmony
 - Biopsychosocial Dworkin, Burgess 1987; Okeson 1995
 - Biologic and psychological perspectives
 - Multifactorial Friction 1988, Okeson 1996
 - Many extrinsic factors in the environments as well as intrinsic with in the patient

Etiologic Theories

- Biopsychosocial: Dworkin, Burgess 1987; Okeson 1995
- Biological: activation of pain pathways, with or without a demonstrable pathologic condition.
- Psychological: behavioral consequences
- Social: interpersonal relationships with friends, families, and health providers

Etiologic Theories

- Multifactorial: Friction 1988, Okeson 1996
 - Extrinsic physical
 - Trauma
 - Extrinsic psychological
 - Acting on the intrinsic host factors physical susceptibility and mental healthiness
 - Behavioral issues
 - Stress, anxiety, interpersonal relationships and oral habits
 - Physical issues
 - Joint anatomy, loading, pathology, muscle physiology

Etiologic Theories

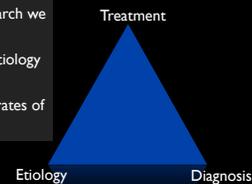
- Multifactorial and Biopsychosocial
 - Good for the group
 - Poor for the individual

Etiologic Theories

- "...little is known about the etiology of the individual patient."
- Laskin 2006
- The more research that has been done, the less able we have been to predictably, accurately and precisely be able to comprehensively diagnose a patient.

Etiologic Theories

- Despite this, with all the research we have
- Traditional triad: Diagnosis, etiology and treatment
- Reported treatment success rates of 75%-90% worldwide



To Reach this Rate 75%-90%

- Must have intellectual framework to provide excellent care for the TMD patients while still recognizing the limitations of the current state of knowledge

In the End

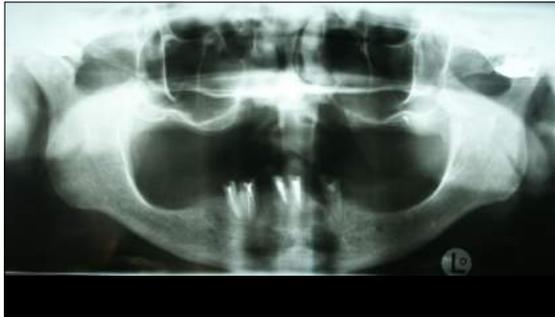
- *From years of extensive research,* treating all of the disorders: masticatory muscle pain, disc derangements, and osteoarthritis, treatment recommendations are consistently a **conservative** and **reversible** approach to initial therapy

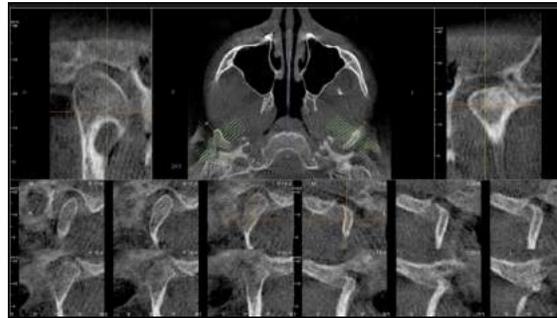
Examination

Exam Process

- THOROUGH & ANALYTIC
- History of the chief complaint
- Dental, medical and psychosocial history
- Clinical examination
- Panoramic radiograph, bitewing and periapical radiographs where indicated







Exam Process

- Other radiographic images (CT or MRI) should be delayed until the diagnostic protocol is leading in a direction other than masticatory muscle pain

Exam Process

- Remember
- “Common Things Occur Commonly”

Exam Process

- Be systematic!!!
- Systems: efficiency, consistency, accuracy, repeatability, productivity
- The exam process should eliminate diagnoses and provide not necessarily a definitive diagnosis, but a *working* diagnosis.

Exam Process

- The Problem!
- Patient presents with pain, how much time do we set aside? Typically an emergent presentation!
- Complicates our process?
- Puts us at a disadvantage to appropriate diagnosis!

Exam Process Chief Complaint & Patient Interview

- Chief complaint: In patient's own words
- Pain, joint sounds, functional jaw limitation, nausea, photophobia, phonophobia, vertigo, loss of equilibrium
- Multiple chief complaints can indicate multiple diagnoses
- Ask succinct questions and listen!

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
- Location:
 - Generalized vs. specific region
 - Uni- vs. Bi-lateral
 - Singular or multiple areas
 - Diagrams are useful

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
- Quality of pain:
 - Patient description of quality of pain
 - Sharp, dull, burning, electrical, aching
- Intensity of pain: 1-10 scale
- Relative course of pain since its onset

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
- Onset, pattern, duration:
 - Inquire: How long the pain or other symptoms have been present?
 - What causes these symptoms occur?
 - When and under what conditions it first appeared?
 - Ex: after a dental appointment
 - How long does it last?

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
- Chronicity = critical
 - 3-6 months and record of treatment failures
 - Specifics on past treatments
 - Educate the patient on this!
 - Impact on: differential diagnosis, prognosis and subsequent management

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
 - What time of day?
 - Morning, day, night. Sporadic or consistent
 - Modifiers: what makes the pain better or worse
 - Chewing, ibuprofen, ice water, sweets, past treatments, self-help

Exam Process Chief Complaint & Patient Interview

- Pain:
 - Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
 - Co-morbid signs or symptoms
 - Clinical depression, acute anxiety, vomiting, nausea, tearing, visual changes, dizziness, numbness, or generalized pain?
 - Previous trauma
 - MVA, sports accidents, head or neck trauma

Exam Process Chief Complaint & Patient Interview

- Pain: Location, quality, intensity, onset, pattern, duration, chronicity, modifiers, associated symptoms
- Examples:
 - Pain in preauricular areas = intracapsular TMJ disorder
 - Diffuse multiple sites of pain = pain of muscle origin
 - Afraid to touch their face because of sudden shock-like pain = trigeminal

Exam Process Medical, Dental Psychosocial History

- Systemic conditions
- Past and present illnesses
- History of trauma or surgery to the head, face, or neck
- Operations and hospitalizations
- Current treatments

Exam Process Medical, Dental Psychosocial History

- Current prescription and nonprescription medications
- Anything taken for chief complaint
- Any medications that could be affiliated with chief complaint
- Cholesterol lowering medications

Exam Process Medical, Dental Psychosocial History

- Review of systems
- Cardiovascular, dermatologic, gastrointestinal, musculoskeletal, neurologic, otological, psychiatric, respiratory, or urogenital problems

Exam Process Medical, Dental Psychosocial History

- Dental History
- Treatment of the chief complaint
- Any recent dental treatment



Exam Process Medical, Dental Psychosocial History

- Psychosocial history
- Alcohol, tobacco, recreational drug use
- Changes in patient's life or lifestyle
- Recent stress and association with onset of symptoms

Exam Process Biobehavioral Assessment

- Objective: Determine the presence or absence of repetitive or persistent oral behaviors.

Exam Process Biobehavioral Assessment

- Clench or grind teeth when asleep
- Sleep in a position that puts pressure on the jaw
- Grind teeth during waking hours
- Clench or press teeth together during waking hours
- Touch or hold teeth together other than while eating
- Hold, tighten, or tense muscles without clenching or bringing them together
- Hold or jut jaw forward or to the side
- Press tongue forcibly against the teeth
- Placed tongue between the teeth

Exam Process Biobehavioral Assessment

- Bite, chew, or play with tongue, cheeks, or lips
- Hold jaw in rigid or tense position to brace or protect the jaw
- Bite or hold objects such as hair, pipe, pencil, fingers, fingernails, etc between the teeth
- Use chewing gum
- Place musical instrument that involves use of the mouth or jaw
- Lean with hand on the jaw, such as cupping or resting the chin in the hand
- Eat between meals (food that requires chewing)
- Do sustained talking
- Sing
- Yawn excessively
- Hold telephone between the head and shoulder

Exam Process Biobehavioral Assessment

- None of the time
- Some of the time
- Most of the time
- All of the time

Exam Process Biobehavioral Assessment

- Educate the patient!
- When should our teeth touch?
- How many minutes in the day should they touch?
- If they are touching and you are not eating or swallowing, **YOU ARE CLENCHING**

Exam Process Biobehavioral Assessment

- But it is uncomfortable to have my teeth apart!?

Exam Process Jaw Functional Limitation Scale

- Chewing tough food
- Chewing hard bread
- Chewing chicken
- Chewing soft food
- Eating soft food requiring no chewing
- Opening wide enough to bite a whole apple
- Opening wide enough to bite into a sandwich
- Opening wide enough to talk
- Opening wide enough to drink from a cup

Scale 1-10

Exam Process Jaw Functional Limitation Scale

- Swallowing
- Yawning
- Talking
- Singing



- Frowning
- Kissing
- Smiling
- Laughing

Scale 1-10

Clinical Examination

- Head posture and body posture
- Facial Symmetry
 - Asymmetry, swelling, inflammation, hypertrophy, paralysis
- Opening pattern
- Deviations: corrections or non-corrections



Clinical Examination

- Range of motion (ROM)
- Vertical ROM = pain-free opening, maximum unassisted and assisted opening
- Lateral ROM and protrusive ROM



Clinical Examination

- Joint palpation
- Sounds upon opening, closing and excursive movements
- Use fingers to detect sounds (Auscultation can be used)
- Detection of pain or tenderness on the joint and distal to the joint while open and closed

Clinical Examination

Muscle palpation
 Unilaterally to determine pain:
Masseter = origin (anterior and posterior),
 body and angle
Temporalis = anterior, middle and posterior
Occipital
SCM = origin and body
Medial pterygoid



Submandibular vs. lateral to the mandible

Clinical Examination

Intraoral examination
Oral pathology screening

Dental examination: missing teeth, existing restorations, caries, cracked teeth, periapical or periodontal abscess, pericoronitis, abfractions, short clinical crowns

Periodontal examination: probing, attachment loss, mobility, inflammation, oral hygiene/plaque control
 Relationship of attachment loss and parafunction
 Relationship of mobility in the absence of attachment loss or periodontal disease
 Bone shielding

Clinical Examination

Intraoral examination
Occlusal examination:
 Angle classification
 Class II
 Lateral and protrusive guidance
 Posterior bite support (8 micron shimstock)
 anterior repositioning
 Fremitus
 Signs of bruxism or oral habits
 wear facets
 cheek, nail or lip biting
 lateral tongue scalloping
 frictional keratosis



Clinical Examination

Intraoral examination
Endodontic evaluation:
 Of appropriate area
 Pulp vitality test
 Percussion
 Tooth sleuth



Differential Diagnosis

Differential Diagnosis

Boring, complicated, complex but IMPORTANT

Differential Diagnosis

- The most common type of masticatory muscle disorder is myofascial pain.
- Pain is the most common feature of most masticatory muscle disorders
- Limited range of motion and chewing difficulties are second most common

Differential Diagnosis Oral-facial Pain

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • Muscle Disorders • Myofascial pain • Myositis • Mysospasm • Local (nonspecific) myalgia • Myofibrotic contracture • Neoplasia | <ul style="list-style-type: none"> • Primary TMJ Disorders • Osteoarthritis • Disc displacements • Jaw Dysfunction • Other • Toothache • Pericoronitis • Maxillary sinusitis • Earache • Periodontal disease | <ul style="list-style-type: none"> • cont'd other • Salivary gland pathosis • Temporal arteritis • Neuralgias • Tension & other types of headache • Angina pectoris • Carcinoma of the maxillary sinus • Carcinoma of the nasopharynx • Eagle's syndrome |
|---|--|---|

Sources of Pain in the Orofacial Region

System	Pain Pattern	Pain Description	Pain Examples
Extracranial	Becomes continuous	Variable, but usually aching or throbbing	Dental pain Acute sinusitis
Intracranial	Continuous	Aching, throbbing, sharp, or lancinating	Acoustic neuroma Aneurysms
Neurovascular	Episodic or intermittent	Aching, throbbing, may have episodes of	Facial migraine Migraine
Musculoskeletal	Continuous and variable with	Aching	Myalgia Myofascial pain
Peripheral neuropathic pain	Continuous, variable; exacerbated by	Deep aching	Peripheral trigeminal neuropathy
Central neuropathic pain	Continuous, may or may not be variable;	Aching, burning	Chronic centralized trigeminal
Psychogenic pain	Variable	Variable	Somatization disorders

System	Pain Pattern	Pain Description	Pain Examples
Extracranial	Becomes continuous	Variable, but usually aching or throbbing	Dental pain Acute sinusitis Mucogingival lesions Oropharyngeal tumors
Intracranial	Continuous	Aching, throbbing, sharp, or lancinating	Acoustic neuroma Aneurysms Tumors
Neurovascular	Episodic or intermittent	Aching, throbbing, may have episodes of sharp or boring pain	Facial migraine Migraine Cluster headache Paroxysmal hemicrania
Musculoskeletal	Continuous and variable with exacerbations with function or	Aching, can be described as sharp	Myalgia Myofascial pain Arthritides

System	Pain Pattern	Pain Description	Pain Examples
Peripheral neuropathic pain	Continuous, variable; exacerbated by static mechanical stimulation; variable response to local analgesic blocking, but generally blockable	Deep aching	Peripheral trigeminal neuropathy Neuritis Neuroma
Central neuropathic pain	Continuous, may or may not be variable; exacerbated by dynamic light touch; not responsive to local analgesic blocking	Aching, burning	Chronic centralized trigeminal neuropathy Complex regional pain syndromes I and II
Psychogenic pain	Variable	Variable	Somatization disorders Psychotic disorders

Myositis

- Primary inflammation of muscle resulting from infection or trauma
- Constant acute pain in one or more masticatory muscles
- Usually has swelling, redness of the overlying skin, and increase temperature over the involved muscle
- Moderate to severe limited range of motion and pain on movement
- Different from myofascial pain due to acuteness, quality and constancy of the reported pain and the associated sequelae. History of recent trauma and unambiguous responses to muscle palpation
 - Okeson 1996, McNeill, Dubner 2001

Myospasm

- "Muscle cramp"
- Acute and rare
- Sudden, involuntary, and continuous tonic contraction of a muscle or muscles.
- Localized acute pain and severely limited range of motion of the muscle

Local (Nonspecific or Unclassified) Myalgia

- General category of acute muscle pain disorders whose etiology and pathology cannot be explained.
- Protective muscle splinting that accompanied joint inflammation or injury, delayed post-exercise muscle soreness, muscle fatigue, and pain from ischemia
- Last resort diagnosis when everything else has been ruled out

Myofibrotic Contracture

- Painless shortening of muscle as a result of scarring/fibrosis around the involved muscle tissue.
- Follows: infectious process or trauma
- Characteristic jaw dysfunction: limited mouth opening and unyielding resistance to passive jaw-muscle stretch (hard end-feel)

Neoplasia

- Depending on size and location:
 - Jaw dysfunction, deviation of the mandible, acute malocclusion, pain is possible
 - Differentiated from: adaptive muscle hypertrophy, parotid gland disease, enlarged lymph nodes and any other regional growth or swelling.

Differential Diagnosis

- The most common type of masticatory muscle disorder is myofascial pain.
- Pain is the most common feature of most masticatory muscle disorders
- Limited range of motion and chewing difficulties are second most common

Myofascial Pain

- Dull regional ache that increases during function
- Tender site upon palpation in one or more masticatory muscles
- Palpation can stimulate referred pain
- Accompanied by: tension-type headache, earache, toothache, unverifiable sensation of acute malocclusion, sensation of muscle stiffness and reduced range of motion of the mandible
 - Okeson 1996, McNeill, Dubner 2001

Differential Diagnosis Term Myofascial Pain used when:

- Three subjective criteria
- Spontaneous, dull aching pain and localized tenderness in the involved muscles
- Stiffness in the involved body area
- Easily induced fatigue with sustained function

Differential Diagnosis Term Myofascial Pain used when:

- Four objective criteria
- Hyper-irritable spot in a palpable taut band of skeletal muscle or muscle fascia
- Patient reports new or increased dull aching pain in a nearby site on sustained compression of the hyper-irritable spot
- Decreased range of unassisted movement of the involved body area
- Weakness without atrophy and the absence of a neurologic deficit to explain the weakness

Centrally Mediated Chronic Muscle Pain

- Extension/part of fibromyalgia
- Information about other areas that are chronically/persistently painful/tender
- Chronic/long-standing masticatory muscle pain can become centrally mediated: therefore interview process on duration is critical.
- Thorough psychologic diagnostic assessment is necessary
 - Is pain related to: depression, anxiety, somatization, or other psychological, psychosocial, or psychiatric conditions?

Centrally Mediated Chronic Muscle Pain

- Anatomic basis: Bilateral jaw closers in addition to the other common fibromyalgia sites
- Etiology: Unknown, but clearly aggravated by stress
- Pain mechanism: Peripheral and central sensitization of muscle nociceptors and pain pathways
- Treatment: Fibromyalgia treatment with behavioral modification, oral appliance, physical medicine, pharmacology

Most Common Types of Myofascial Pain

- Localized primary myalgia/myofascial pain
 - Stress and/or medication induced = parafunction
- Localized secondary myalgia/myofascial pain (joint disease induced)
- Regional primary myalgia/myofascial pain
- Regional secondary myalgia/myofascial pain

Localized Myofascial Pain (iatrogenic trauma)

- Anatomic basis: Unilateral pain in the medial pterygoid associated with trismus
- Etiology: Anesthetic injection bases myositis
- Pain mechanism: Cellular damage and inflammation
- Treatment: rest the jaw, NSAID, ice, delayed daily active mobilization of the jaw until normal ROM is achieved

Localized Myofascial Pain (traumatic injury)

- Anatomic basis: Unilateral pain in masseter or temporalis
- Etiology: Traumatic injury to the side of the jaw or temple
- Pain mechanism: Cellular damage and inflammation
- Treatment: rest the jaw, NSAID, ice, delayed daily active mobilization of the jaw until normal ROM is achieved

Localized Myofascial Pain (stress/parafunction)

- Anatomic basis: Unilateral masseters bilaterally
 - SCM, temporalis and occipital as well
- Etiology: Sustained parafunction (clenching etc.)-induced muscle pain
- Pain mechanism: Hypoperfusion with accumulation of endogenous algescic substances
- Treatment: behavioral modification, oral appliance, pharmacology, physical medicine

Localized Myofascial Pain (extrapyramidal/drug induced)

- Anatomic basis: Unilateral masseters bilaterally
 - SCM, temporalis and occipital as well
- Etiology: Sustained parafunction (clenching etc.)-induced muscle pain
- Pain mechanism: Hypoperfusion with accumulation of endogenous algescic substances
- Treatment: behavioral modification, oral appliance, pharmacology, physical medicine

Selective Serotonin Reuptake Inhibitors (SSRI)

- 10-15% of bruxers turn into SUPER BRUXERS

SSRI Enhanced Bruxism

- Selective Serotonin Reuptake Inhibitor
- citalopram (Celexa, Cipramil, Cipram, Dalsan, Recital, Emocal, Sepram, Seropram, Citox)
- dapoxetine (no trade name yet; not yet approved by the FDA)
- escitalopram (Lexapro, Cipralex, Esertia)
- fluoxetine (Prozac, Fontex, Seromex, Seronil, Sarafem, Ladose, Fluctin (EUR), Fluox (NZ), Depress (UZB), Lovan (AUS))
- fluvoxamine (Luvox, Fevarin, Faverin, Dumyrox, Favoxil, Movox)
- paroxetine (Paxil, Seroxat, Sereupin, Aropax, Deroxat, Rexetin, Xetanor, Paroxat)
- sertraline (Zoloft, Lustral, Serlain)
- zimeclidine (Zelmid, Normud)

Brown SE, Hong SC. Antidepressant-induced bruxism successfully treated with gabapentin. JADA. 130: Oct 1999; 1467-1469.

Bostwick JM, Jaffee MS. Buspiron as an antidote to SSRI-induced bruxism in 4 cases. J Clin Psychiatry. 60(12):Dec 1999; 857-860.

Gerber PE, Lynd LD. Selective serotonin-reuptake inhibitor-induced movement disorders. Ann Pharmacother. 1998 Jun; 32(6): 692-8.

Ellison JM, Stanziani P. SSRI-associated nocturnal bruxism in four patients. J Clin Psychiatry. 54(11): Nov 1993;432-434.

Winocur E, Gavish A, Voikovitch M, Emodi-Periman A, Eli I. Drugs and bruxism: a critical review. J Orofac Pain. 17(2): 2003 spring; 99-111.

What to do?

- Medical consult
- Change medications
 - Under M.D. Supervision
- Reduce dosage
- Antedote: Buspirone (Buspar)
 - 10mg bid, titrate up to 50mg per day if needed
- Medical consult needed.



Localized Secondary Myofascial pain (joint disease induced)

- Anatomic basis: Unilateral anterior temporalis and deep masseter on affected side
- Etiology: Secondary to local TMJ disease (either arthritis or internal derangement)
- Pain mechanism: Hypoperfusion with accumulation of endogenous algescic substances
- Treatment: TMJ treatment first with behavioral modification, oral appliance, physical medicine, pharmacology

Primary Regional Myofascial pain

- Anatomic basis: Usually unilateral pain involving the temporalis, trapezius, splenius capitus and SCM
- Etiology: Stress and/or clenching-induced regional muscle pain
 - History of head, neck, back trauma
- Pain mechanism: combination of hypoperfusion and peripheral sensitization of muscle nociceptors
- Treatment: behavioral modification, oral appliance, physical medicine, pharmacology

Secondary regional myofascial pain

- Anatomic basis: Usually unilateral pain involving the temporalis, trapezius, splenius capitus and SCM
- Etiology: Secondary to local TMJ disease (arthritis or internal derangement)
- Pain mechanism: combination of hypoperfusion and peripheral sensitization of muscle nociceptors
- Treatment: TMJ treatment first with behavioral modification, oral appliance, physical medicine, pharmacology

Velly AM, Gornitsky M, Phillippe P. Contributing factors to chronic myofascial pain: A case-control study. Pain 2003;104:491-499.

- Tooth clenching and grinding was significantly associated with either an elevated anxiety score or elevated depression score.
- Female, trauma and clenching were statistically significant and related to chronic MPD
- Grinding only behavior, age, income and education were not related to chronic MPD

Treatment

Treatments Consistently Include

- Pharmacy
- Oral appliances
- Physical medicine
- Home care
- Cognitive-behavioral program
- Psychologic therapy

Treatments DO NOT Consistently Include

- Surgery
- Occlusal equilibration
- Occlusal reconstruction

- “long-term research on clinical outcomes from the around the world supports the use of conservative and reversible treatments as the only appropriate way to treat the vast majority of TMD patients.”

- Zarb, Thompson 1970, Green, Laskin 1974, Green, Markovic 1976, Cohen, 1978, deLeeuw, Boering, Stegenga, de Bont 1995, Mjersjo, Carlsson, 1983, Greene, Laskin 1983, Mjersjo, Carlsson 1984, Okeson 1986, Greene, 1988, Garafis, Grigoriadu, Jarafi 1994, Stohler 1999, Laskin, Greene, Hylander 2006

Diagnosis & treatment

- Correct diagnosis and management is often complicated by the concurrent presence of multiple etiologies. Patient with MPD may require multidisciplinary treatment involving occlusal therapy medications, biofeedback, and physical therapy. Extensive fixed prosthodontic treatment should be postponed until the patient's conditions have been stabilized at acceptable levels.
- Rosenstiel 2001

Treatments

- Phase I = conservative and reversible
- Phase II = invasive and irreversible
- Many times an excuse for no success in phase I when may have been stalled treatment for a chronic condition, non-compliant patient or a multitude of other factors.

Treatments

- Good primary care is not the first phase of treatment, but rather is a treatment program that most TMD patients require and is usually quite successful.
- From long term studies, most advocate that conservative and reversible treatments are the only appropriate way to treat the vast majority of TMD
- American Academy of Orofacial Pain: “Oral facial Pain: Guidelines for Assessment, Diagnosis, and Management” 1996
- Green, Laskin 1974, Zarb, Thompson 1970, Greene, Markovic 1976, de Leeuw, Boering, et al 1995, Mjersjo, Carlsson, 1983, Garafis, Grigoriadu, Jarafi 1994.

Approach Advocated Today

- Biopsychosocial/cognitive-behavioral
 - Educating and Treating TMD patients
 - Behavior management
 - Not an etiologic issue, but a tactical one
 - Sensitive to the psychological ramifications of pain in both acute and chronic TMDs
 - Anxiety and depression
 - Distinction between palliative and definitive treatment has little meaning

Approach Advocated Today

- Patient education is key!
- We barely have a grip on this, they have no idea.
- Without understanding treatment will be a failure!

NSAIDs

- NSAIDs
 - Ibuprofen 400-600mg tid for 7 days
 - Past 7 days tolerance starts to develop
 - Celecoxib 100mg bid for 7 days
 - Naproxen 500mg bid for 7 days
- Hawkey C, Laine, L, Simon T et al. Arthritis Rheum 2000
- Schmassmann A. Am J Med 1998

Muscle relaxants

- Skeletal muscle relaxants
 - Little support for significant benefit
 - Short doses in conjunction with physical therapy/massage therapy
 - Cyclobenzaprine (Flexeril)
 - One 5 mg before bed
 - Up to 5mg tid for no more than 14 days
 - Brown BR, Womble J. JAMA 1978
 - Max MB, Gilron Bonica's Management of Pain 2001

Occlusal appliance

- Complete-coverage stabilizing appliances
- Partial-coverage appliances
- Mandibular repositioning Appliances
- Soft vs. Hard appliances

Occlusal appliance

- Do not reduce clenching or bruxism
- Protect the teeth
- Have been shown to effectively reduce myofascial pain
- Deprogram the muscles
- They should not alter the occlusion
- Should not be worn 24/7 unless in an acute phase for a very short period of time
- Okeson JP: 1998 Dao TT, Lavigne GJ 1998

Occlusal appliance

- Full coverage
- Bilateral simultaneous contacts in CR
- Just miss contacts in CR in the anterior
- Flat plane with shallow anterior guidance
- Smooth freedom in excursive movements
- FREQUENT AND ANALYTICAL FOLLOW-UP
 - Use of 8 micron shimstock
 - Chase the dots!
- Okeson JP: 1998 Dao TT, Lavigne GJ 1998

Occlusal appliance

- Follow patient's occlusion without occlusal guard
- Patient's that present with acute occlusal changes (i.e. anterior repositioning) should achieve an appropriate maximum intercuspation. If not achieved a TMJ internal derangement should be considered in the differential diagnosis.
- Okeson JP: 1998 Dao TT, Lavigne GJ 1998



Direct Technique Advantages

- Fit is excellent
- Minimal adjustment for comfort
- Minimal adjustment for seating
- Durable and long-lasting
- Reduced laboratory cost
- Easy to add to and subtract





Ice/heat

- Ice/heat
- Heat has shown limited benefit
- Short duration of ice over the inflamed pain has shown to reduce inflammation and pain.
- Hecht PJ, Bachmann S, Botht Re, Rothman RH. Clinical Orthop Relat Res 1983

Limited ROM

- Limited ROM
- Soft food diet
- Limit opening upon yawning
- No bagels, french bread, chewing gum or chewy foods
- Until symptoms cease and then 6 weeks after
 - Otherwise relapse will occur

Sleep Position

- Side and stomach place one in a posture more likely to clench and grind
- Back sleeping is recommended to aid in reduction of nocturnal bruxism and clenching

Physical medicine

- Physical medicine
- Physical therapy
 - Jaw manipulation
 - TENS
 - Iontophoresis
 - Low-level laser therapy
- Chiropractic/massage therapy
- Acupuncture

Malone MD, Strube MJ, Scogin FR. Pain 1988
 Sturdivant J, Friction JR. Curr Opin Dent 1991
 Feine JS, Widmer CG, Lund 1997
 Laskin, Greene, Hylander 2006

Team Approach

- Keystone Chiropractic
- Muscle therapy
- Relaxation therapy
- Dr. Nathan Lorenz
 - 614-475-1900
 - 1251 North Hamilton Road, Gahanna, OH 43230



Psychologic therapy

- Psychologic therapy
- Counseling
- Stress Management
- Biofeedback
- Relaxation
- Self-monitoring
- Exercise

Ohrbach R, Dworkin SF. Pain 1998
Mohl ND, Ohrbach R. J Dent Educ 1992
Jensen MP, Neilson W, Turner JA, Romano JM
Hill MP. Pain 2003

Follow-up

- Regular follow-up appointments
- With resolution, continue compliance for 6 weeks to avoid relapse
- Check and adjust occlusal guard
- Monitor progress
- Monitor compliance
 - Compliance can be very poor
- Verify diagnosis, adjust diagnosis, further diagnostic information

Summary

- Myofascial pain disorder is amongst the most common pain disorders
- Complete and thorough examination process is critical to differential diagnosis
- A working diagnosis must be made and confirmed through therapy or appropriately altered.
- Myofascial pain disorder is a biopsychosocial disorder that must be appropriately and comprehensively addressed for long-term success
- Conservative reversible treatment has been repeatedly shown to successfully treat the vast majority of cases over the last 50 years.

Myofascial Pain

Dysfunction



SPECTRUM DENTAL

AND PROSTHODONTICS

Thank you!