TREATMENT OF THE
MEDICALLY COMPLEX
PATIENT

CHRONIC OROFACIAL PAIN

National Network for Oral
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2015
Thank-you for all that you do!

- Antibiotic Chemoprophylaxis
  - AHA Guidelines
  - Prosthetic Joints
  - Immunosuppression
- MRONJ
- Vasoconstrictor Use
- The New Anticoagulants
The Short Version

First Do No Harm
1. If what you are doing is doing good, keep doing it.
2. If what you are doing is not doing good, stop doing it.
3. If you do not know what to do, do nothing.
4. Never make the treatment worse than the disease.
A Skeptic's Guide to Guidelines
Journal of the American Dental Association (1939) 143(4):328-9 · March 2012
AHA Guidelines for chemoprophylaxis of infective endocarditis 2008
Who gets covered

- Prior infective endocarditis
- Prosthetic cardiac valves
- Unrepaired cyanotic congenital heart defects, including palliative shunts and conduits
- Congenital heart defects completely repaired with prosthetic material or a device, whether placed by surgery or by catheter intervention, during the first 6 months after the procedure
- Repaired congenital defects with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device
- Cardiac transplants and development of cardiac valvulopathy
Dental procedures for which endocarditis prophylaxis is reasonable for patients in Box 3.

All dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa.*

* The following procedures and events do not need prophylaxis: routine anesthetic injections through noninfected tissue, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of primary teeth, and bleeding from trauma to the lips or oral mucosa.
<table>
<thead>
<tr>
<th>SITUATION</th>
<th>AGENT</th>
<th>REGIMEN: SINGLE DOSE 30-60 MINUTES BEFORE PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>Amoxicillin</td>
<td>Adults: 2 grams</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children: 50 milligrams per kilogram</td>
</tr>
<tr>
<td>Unable to Take Oral Medication</td>
<td>Ampicillin OR Cefazolin or ceftriaxone</td>
<td>2 g IM* or IV†</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 g IM or IV</td>
</tr>
<tr>
<td>Allergic to Penicillins or Ampicillin Oral</td>
<td>Cephalexin OR Clindamycin OR Azithromycin or clarithromycin</td>
<td>2 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500 mg</td>
</tr>
<tr>
<td>Allergic to Penicillins or Ampicillin and Unable to Take Oral Medication</td>
<td>Cefazolin or ceftriaxone OR Clindamycin</td>
<td>1 g IM or IV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600 mg IM or IV</td>
</tr>
</tbody>
</table>

* IM: Intramuscular.
† IV: Intravenous.
‡ Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosage.
§ Cephalosporins should not be used in a person with a history of anaphylaxis, angioedema or urticaria with penicillins or ampicillin.
# Antibiotic Prophylaxis for Dental Patients with Total Joint Replacements

## Patients at Potential Increased Risk of Hematogenous Total Joint Infection

*All Patients During the First Two Years Following Joint Replacement*

**Immunocompromised/Immunosuppressed Patients**
- Inflammatory arthropathies such as rheumatoid arthritis, systemic lupus erythematosus
- Drug- or radiation-induced immunosuppression

**Patients with Comorbidities**
- Previous prosthetic joint infections
- Malnourishment
- Hemophilia
- HIV infection
- Insulin-dependent (Type I) diabetes
- Malignancy

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†Conditions shown for patients in this category are examples only; there may be additional conditions that place such patients at risk of experiencing hematogenous total joint infection.
# Antibiotic Prophylaxis for Dental Patients with Total Joint Replacements (Cont.)

## Incidence Stratification of Bacteremic Dental Procedures*

**Higher Incidence†**
- Dental extractions
- Periodontal procedures including surgery, subgingival placement of antibiotic fibers/strips, scaling and root planing, probing, recall maintenance
- Dental implant placement and reimplantation of avulsed teeth
- Endodontic (root canal) instrumentation or surgery only beyond the apex
- Initial placement of orthodontic bands but not brackets
- Intraligamentary and intraosseous local anesthetic injections
- Prophylactic cleaning of teeth or implants where bleeding is anticipated

**Lower Incidence§**
- Restorative dentistry (operative and prosthodontic) with or without retraction cord**
- Local anesthetic injections (nonintraaligamentary and nonintraosseous)
- Intracanal endodontic treatment; post placement and buildup
- Placement of rubber dam
- Postoperative suture removal
- Placement of removable prosthodontic/orthodontic appliances
- Taking of oral impressions
- Fluoride treatments
- Taking of oral radiographs
- Orthodontic appliance adjustment

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* Adapted with permission from the publisher from Dajani, et al.
† Prophylaxis should be considered for patients with total joint replacement who meet the criteria in Table 1. No other patients with orthopedic implants should be considered for antibiotic prophylaxis prior to dental treatment/procedures.
§ Prophylaxis not indicated.
** Clinical judgment may indicate antibiotic use in selected circumstances that may create significant bleeding.
** This includes restoration of carious (decayed) or missing teeth.
SUGGESTED ANTIBIOTIC PROPHYLAXIS REGIMENS*

Patients not allergic to penicillin:
Cephalexin, cephradine or amoxicillin
2 grams orally 1 hour prior to the dental procedure

Patients not allergic to penicillin and unable to take oral medications:
Cefazolin or ampicillin
Cefazolin 1 g or ampicillin 2 g intramuscularly or intravenously 1 hour prior to the dental procedure

Patients allergic to penicillin:
Clindamycin
600 mg orally 1 hour prior to the dental procedure

Patients allergic to penicillin and unable to take oral medications:
Clindamycin
600 mg IV 1 hour prior to the dental procedure

* No second doses are recommended for any of these dosing regimens.
The Dental Treatment of Patients with Joint Replacements
A Position Paper From the American Academy of Oral Medicine
James W. Little, DMD, MS,
Jed J. Jacobson, DDS, MS, MPH,
Peter B. Lockhart, DDS and
for the American Academy of Oral Medicine

The Journal of the American Dental Association
June 2010 vol. 141 no. 6 667-671
Clinical Implications. Until this issue is resolved, dentists have three options: inform their patients with prosthetic joints about the risks associated with AP use and let them decide; continue to follow the 2003 guidelines; or suggest to the orthopedic surgeon that they both follow the 2003 guidelines.
The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints

Thomas P. Sollecito, DMD, FDS RCSEd, Elliot Abt, DDS, MS, MSc, Peter B. Lockhart, DDS, FDS RCSEd, FDS RCPS, Edmond Truelove, DDS, MSD, Thomas M. Paumier, DDS, Sharon L. Tracy, PhD, Malavika Tampi, MPH, Eugenio D. Beltrán-Aguilar, DMD, MPH, MS, DrPH, Julie Frantsve-Hawley, PhD

The Journal of the American Dental Association
Volume 146, Issue 1, Pages 11-16.e8 (January 2015)
DOI: 10.1016/j.adaj.2014.11.012
Management of patients with prosthetic joints undergoing dental procedures

Clinical Recommendation:
In general, for patients with prosthetic joint implants, prophylactic antibiotics are not recommended prior to dental procedures to prevent prosthetic joint infection.

For patients with a history of complications associated with their joint replacement surgery who are undergoing dental procedures that include gingival manipulation or mucosal incision, prophylactic antibiotics should only be considered after consultation with the patient and orthopedic surgeon.* To assess a patient’s medical status, a complete health history is always recommended when making final decisions regarding the need for antibiotic prophylaxis.

Clinical Reasoning for the Recommendation:
- There is evidence that dental procedures are not associated with prosthetic joint implant infections.
- There is evidence that antibiotics provided before oral care do not prevent prosthetic joint implant infections.
- There are potential harms of antibiotics including risk for anaphylaxis, antibiotic resistance, and opportunistic infections like Clostridium difficile.
- The benefits of antibiotic prophylaxis may not exceed the harms for most patients.
- The individual patient’s circumstances and preferences should be considered when deciding whether to prescribe prophylactic antibiotics prior to dental procedures.

* In cases where antibiotics are deemed necessary, it is most appropriate that the orthopedic surgeon recommend the appropriate antibiotic regimen and when reasonable write the prescription.
Medication Related Osteonecrosis of the Jaws
BRONJ
ONJ
Bis Jaw
Patients may be considered to have MRONJ if all of the following three characteristics are present:

1. Current or previous treatment with an anti-resorptive;
2. Exposed, necrotic bone in the maxillofacial region that has persisted for more than eight weeks; and
3. No history of radiation therapy to the jaws.
Drug-related risk factors include:

Potency of the particular bisphosphonate: the IV route of administration results in a greater drug exposure than the oral route.

Duration of therapy:
longer duration appears to be associated with increased risk.

Local risk factors include:

Dentoalveolar surgery
Local anatomy
Concomitant oral disease
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Primary Indication</th>
<th>Nitrogen Containing</th>
<th>Dose</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alendronate (Fosamax®)</td>
<td>Osteoporosis</td>
<td>Yes</td>
<td>10 mg/day 70 mg/week</td>
<td>Oral</td>
</tr>
<tr>
<td>Risedronate (Actonel®)</td>
<td>Osteoporosis</td>
<td>Yes</td>
<td>5 mg/day 35 mg/week</td>
<td>Oral</td>
</tr>
<tr>
<td>Ibandronate (Boniva®)</td>
<td>Osteoporosis</td>
<td>Yes</td>
<td>2.5 mg/day 150 mg/month</td>
<td>Oral</td>
</tr>
<tr>
<td>Pamidronate (Aredia®)</td>
<td>Bone Metastases</td>
<td>Yes</td>
<td>90 mg/3 weeks</td>
<td>IV</td>
</tr>
<tr>
<td>Zolendronate (Zometa®)</td>
<td>Bone Metastases</td>
<td>Yes</td>
<td>4 mg/3 weeks</td>
<td>IV</td>
</tr>
<tr>
<td>(Reclast®)</td>
<td>Osteoporosis</td>
<td>Yes</td>
<td>5 mg/year</td>
<td>IV</td>
</tr>
<tr>
<td>Denosumab (Xgeva®)</td>
<td>Bone metastases</td>
<td>No</td>
<td>Humanized monoclonal antibody</td>
<td>120 mg/4 weeks</td>
</tr>
<tr>
<td>(Prolia®)</td>
<td>Osteoporosis</td>
<td>No</td>
<td>Humanized monoclonal antibody</td>
<td>60 mg/6 months</td>
</tr>
</tbody>
</table>
Appendix II: Medications Used in the Treatment of Various Cancers that are Antiangiogenic or Targets of the Vascular Endothelial Growth Factor (VEGF) Pathway that have been Associated with Jaw Necrosis*.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mechanism of action</th>
<th>Primary indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunitinib (Sutent®)</td>
<td>Tyrosine kinase inhibitor</td>
<td>GIST, RCC, pNET</td>
</tr>
<tr>
<td>Sorafenib (Nexavar®)</td>
<td>Tyrosine kinase inhibitor</td>
<td>HCC, RCC</td>
</tr>
<tr>
<td>Bevacizumab (Avastin®)</td>
<td>Humanized monoclonal antibody</td>
<td>mCRC, NSCLC, Glio, mRCC</td>
</tr>
<tr>
<td>Sirolimus (Rapamune®)</td>
<td>Mammalian target of rapamycin pathway</td>
<td>Organ rejection in renal transplant</td>
</tr>
</tbody>
</table>
When compared to cancer patients receiving antiresorptive treatment, the risk of ONJ for patients with osteoporosis exposed to antiresorptive medications is about 100 times smaller.
At Risk

No apparent necrotic bone in patients who have been treated with either oral or IV bisphosphonates

• No treatment indicated
• Patient education
Exposed and necrotic bone, or fistulae that probes to bone, in patients who are asymptomatic and have no evidence of infection

- Antibacterial mouth rinse
- Clinical follow-up on a quarterly basis
- Patient education and review of indications for continued bisphosphonate therapy
Exposed and necrotic bone, or fistulae that probes to bone, associated with infection as evidenced by pain and erythema in the region of the exposed bone with or without purulent drainage

- Symptomatic treatment with oral antibiotics
- Oral antibacterial mouth rinse
- Pain control
- Debridement to relieve soft tissue irritation and infection control
Stage 3

- Exposed and necrotic bone or a fistula that probes to bone in patients with pain, infection, and one or more of the following: exposed and necrotic bone extending beyond the region of alveolar bone, (i.e., inferior border and ramus in the mandible, maxillary sinus and zygoma in the maxilla) resulting in pathologic fracture, extra-oral fistula, oral antral/oral nasal nasal communication, or osteolysis extending to the inferior border of the mandible of sinus floor
  - Antibacterial mouth rinse
  - Antibiotic therapy and pain control
  - Surgical debridement/resection for longer term palliation of infection and pain
Treatment objectives for established MRONJ

- eliminate pain,
- control infection of the soft and hard tissue
- minimize the progression or occurrence of bone necrosis.
- Chlorhexidine rinses
- Oral antimicrobials
- Debridement
Vasoconstrictor Use BAD!!!!!

Lack of profound anesthesia BADDRER!!!!!!

Endogenous catecholamine release due to lack of profound anesthesia BADDEST!!!!!!!!!
Who is At Risk?

- Uncontrolled hypertension
- Progressive Angina
- Recent MI
- Patients on non-selective beta blockers
<table>
<thead>
<tr>
<th></th>
<th>CCHS Medical User</th>
<th>Non-CCHS Medical User</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>No modifications required</td>
<td>No modifications required</td>
</tr>
<tr>
<td>Diastolic &lt; 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic &lt; 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pre-Hypertension</strong></td>
<td>Provide care Recheck at end of treatment</td>
<td>Provide care Recheck at end of treatment</td>
</tr>
<tr>
<td>Diastolic 80-89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic 120-139</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stage 1 Hypertension</strong></td>
<td>Emergency care only Task PCP</td>
<td>Emergency Care only Refer to PCP – CCHS?</td>
</tr>
<tr>
<td>Diastolic 90-99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic 140-159</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stage 2 Hypertension</strong></td>
<td>No treatment Consult with PCP</td>
<td>No treatment Refer to local hospital ER</td>
</tr>
<tr>
<td>Diastolic &gt;100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic &gt; 160</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypertensive Crises</strong></td>
<td>911</td>
<td>911</td>
</tr>
<tr>
<td>Diastolic &gt;110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic &gt; 180</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hristo Daskalov, Atanaska Dinkova, Martin Drangov

Department of Oral Surgery, Faculty of Dental Medicine, Medical University - Plovdiv, Bulgaria


http://www.journal-imab-bg.org
CONCLUSION:

Based on the contemporary literature review, we can conclude that many studies aimed at improving the locoregional anesthesia of patients with cardiovascular diseases. The benefits from vasoconstrictors in anesthetic solutions for the quality of the anesthesia were being proven. Number of authors maintains the theory that a small amount of adrenaline in the anesthetic solution does not result in complications for patients with controlled cardiovascular diseases, while at the same time significantly increases the effect of the used anesthetic. Main subject of study is the anesthetic Articaine, as some authors recommend it as a first choice agent for local anesthesia in the oral surgery.
Conclusions. Although the increased risk for adverse events among uncontrolled hypertensive patients was found to be low and the reported occurrence of adverse events in hypertensive patients associated with the use of epinephrine in local anesthetics was minimal, the quantity and quality of the pertinent literature is problematic. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2002;93:647-53)
An Update on Local Anesthetics in Dentistry

Daniel A. Haas, BSc, DDS, BScD, PhD, FRCD(C)

- J Can Dent Assoc 2002; 68(9):546-51
Monitor blood pressure and heart rate preoperatively
Minimize administration of epinephrine or levonordefrin
Monitor blood pressure and heart rate 5 min after injection
May re-administer epinephrine or levonordefrin if blood pressure and heart rate are stable
Continue to monitor as required
Consider limiting epinephrine to 0.04 mg, levonordefrin to 0.2 mg
Avoid epinephrine 1:50,000
Never use epinephrine-impregnated retraction cord
<table>
<thead>
<tr>
<th><strong>Table 6</strong> Drug interactions with epinephrine and levonordefrin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nonselective β-blockers</strong></td>
</tr>
<tr>
<td>- Interaction may result in increased blood pressure</td>
</tr>
<tr>
<td>- Reduced use of vasconstrictor is warranted</td>
</tr>
<tr>
<td><strong>Tricyclic antidepressants</strong></td>
</tr>
<tr>
<td>- Interaction may result in increased blood pressure</td>
</tr>
<tr>
<td>- Levonordefrin is contraindicated</td>
</tr>
<tr>
<td>- Reduced dose of epinephrine is warranted</td>
</tr>
<tr>
<td><strong>General anesthetic (halothane [Fluothane])</strong></td>
</tr>
<tr>
<td>- Interaction may result in serious cardiac dysrhythmia</td>
</tr>
</tbody>
</table>
With regard to epinephrine vasoconstriction, many opinions concerning this issue neglect our current understanding of physiology and pharmacology as well as the results of scientific clinical studies.
Issues regarding these medications remain and include: 1) the advantages of combining vasoconstriction with local anesthesia, 2) the physiologic workings of the adrenergic nervous system, 3) toxicity issues of vasoconstrictors, 4) insignificant changes in mean arterial (MAP) blood pressure with relatively small amounts of epinephrine, 5) receptor dynamics, 6) drug-drug interactions, and 7) vasoconstrictor issues with regard to the dental treatment of patients with severe cardiac disease.
Fancy New Anticoagulants

- Rivaroxaban (Xarelto)
- Apixaban (Eliquis)
- Edoxaban (Savaysa/Lixiana)
- Dabigatran (Pradaxa)
- Clopidogrel (Plavix)
XARELTO is a selective inhibitor of FXa. It does not require a cofactor (such as Anti-thrombin III) for activity. Rivaroxaban inhibits free FXa and prothrombinase activity. Rivaroxaban has no direct effect on platelet aggregation, but indirectly inhibits platelet aggregation induced by thrombin. By inhibiting FXa, rivaroxaban decreases thrombin generation.
17.3 Invasive or Surgical Procedures

Instruct patients to inform their healthcare professional that they are taking XARELTO before any invasive procedure (including dental procedures) is scheduled.
2.6 Discontinuation for Surgery and other Interventions

If anticoagulation must be discontinued to reduce the risk of bleeding with surgical or other procedures, XARELTO should be stopped at least 24 hours before the procedure to reduce the risk of bleeding [see Warnings and Precautions (5.2)]. In deciding whether a procedure should be delayed until 24 hours after the last dose of XARELTO, the increased risk of bleeding should be weighed against the urgency of intervention. XARELTO should be restarted after the surgical or other procedures as soon as adequate hemostasis has been established, noting that the time to onset of therapeutic effect is short [see Warnings and Precautions (5.1)]. If oral medication cannot be taken during or after surgical intervention, consider administering a parenteral anticoagulant.
Other Factor Xa inhibitors

- Eliquis (apixaban)
- Savaysa/Lixiana (Edoxaban)
Pradaxa (dabigatran)

- Direct thrombin inhibitor
- FDA just approved reversal agent
- idarucizumab (Praxbind)
Plavix (clopidogrel)

- Clopidogrel is an inhibitor of platelet activation and aggregation through the irreversible binding of its active metabolite to the P2Y12 class of ADP receptors on platelets.
- Pharmacologic effect lasts the life of the platelet
- D/C 5-7 days before surgery after consultation with MD
INR

- INR is meaningless for any of these groups of medications
- INR does not give an accurate representation of the patients anti-coagulation status
- PT may be of some use for Factor X a inhibitors
STOP-BANG

- Snoring
- Tired
- Observed stoppage of breathing
- Pressure
- BMI > 35
- Age > 50
- Neck size > 17
- Gender male
Chronic Orofacial Pain

- ...is a riddle wrapped in a mystery inside an enigma.
- Multiple Diagnoses
- Psychological Overlay
- No Cure
- Symptom Management
1. If what you are doing is doing good, keep doing it.
2. If what you are doing is not doing good, stop doing it.
3. If you do not know what to do, do nothing.
4. Never make the treatment worse than the disease.
In the absence of obvious clinical signs and of dental pathosis, irreversible dental procedures must be deferred and the pain history carefully re-examined.
An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.
Many people report pain in the absence of tissue damage or any likely pathophysiological cause; usually this happens for psychological reasons. There is usually no way to distinguish their experience from that due to tissue damage if we take the subjective report. If they regard their experience as pain and if they report it in the same ways as pain caused by tissue damage, it should be accepted as pain.
Total “PAIN”
An Individualized Experience

- Role “Reversal”
- Change in Appearance
- Social Disability
- Depression
- Anxiety
- Cognitive Dysfunction

Physical Pain

Patient “A”
Pain 8/10

Patient “B”
Pain 8/10

Welden Bell’s Classification of Orofacial Pain
Fig 1 Causes of chronic orofacial pain. *Can be bilateral, **can be unilateral. Types of pain: blue box, neuropathic; red, vascular; purple, muscular; green, primary headaches; orange, mixed, or unknown.
Data Collection

- CC: Chief Complaint
- HPI: History of Present Illness
- Review of Systems
  - Cardiovascular
  - Respiratory
  - Gastrointestinal
  - Genitourinary
  - Musculoskeletal
  - Endocrine
  - CNS/PNS
- ASA Classification
- Current Medications
- Neuropsychiatric Status
- Clinical Examination
  - Extraoral examination
  - Intraoral examination
  - Neuromuscular examination
  - Occlusal examination
- Radiographic Imaging
- Diagnostic Tests
- Recreate the pain complaint
History of Present Illness

- Description of Pain/Quality
- Location, Location, Location
- Duration/Chronicity/Time Course
- What helps/makes it worse?
- Pain Intensity
Pay Attention to what is said and how it is said
Quality

- Sharp
- Dull
- Stabbing
- Squeezing
- Pulsating
Location

- Unilateral
- Bilateral
- Neck
- Temporal
- Frontal
- In ears
- Cheeks
- Angle of Mandible
- Behind eye(s)
- Does it follow dermatome?
Duration/Chronicity

- Constant
- Intermittent
- Minutes/hours/days
- Once a month
- Seasonal
Wake up with it
OK in AM; builds through day
Everyday at 3:00 (except weekends)
When spouse stays home
What makes it better/worse

- Go to my cave
- OTC Meds
- Six Pack
- Hot/Cold Packs
- Green Pills from my cousin
Pain is Personal

Visual Analog Scale (VAS)
- Internally valid
- One to Ten
- One—No pain
- Ten—Worst pain imaginable
Confounds

- Toothache
- Earache
- Sinusitis
- Current Medications
- Medical Condition(s)
- Psychological State
- Secondary Gain
Systemic Considerations

- Cardiovascular — face/jaw pain may be warning sign of MI/vascular insufficiency
- Respiratory — CPAP, fighting for air
- GI — IBS/Crohn’s/GERD — more of a medication issue
- GU — do you want to relax muscle in a person who is incontinent
- Musculoskeletal — DJD, RA, Psoriatic Arthritis, fibromyalgia
Pharmacologic Issues

- Meds with a side effect of myositis/myalgia
- Concomitant CNS depression
- Xerostomia/dizziness
- NSAID burnout
- Opioid use/misuse
Neuropsychiatric Considerations

- Pain of neurogenous origin
- Anxiety
- Depression
- Neuroses vs. psychoses
- Treated vs. non/poorly treated
- Current meds
- Suicidal ideation
- Referral
Extraoral Examination

- Gross Cranial Nerve Function
- Symmetry
- Pain
- Lymphnodes
- Thyroid
- Cervical ROM if indicated
Intraoral Examination

- Soft Tissues
- Hard Tissues
- Salivary Output
- Periodontal Status
Neuromuscular Examination

- Muscle Palpation
- Range of Motion
- Excursive/Protrusive movements
- Joint Noises—palpation/ascultation
Muscle Palpation

- Masseter
- Temporalis
- Lateral Pterygoid
- Medial Pterygoid
- Sternocecidomastoid
- Trapezius
Range of Motion

- Translation/Rotation
- Pain-free opening/Maximum opening
- Assisted opening
- Deviations on opening
- Excursive movements
- Protrusive movements
Evaluation of Joint Sounds

- Pops
- Clicks
- Crepitus
- Reciprocal Clicks
- Early vs. late
- Pain
- Deviation
Every new patient should have a panoramic radiograph or access to imaging of the temporomandibular joint.

Advanced imaging is performed if the findings will change our plan of treatment.
Treatment

- Render a Diagnosis
- Treat Vs. Referral
- Pharmacotherapy
  - NSAIDS
  - Corticosteroids
  - Muscle Relaxants
  - Tricyclic Antidepressants
  - Narcotics
- Heat and Cold
- Physical Medicine
- Splint
- Counseling
  - Psychological
  - Psychiatric
- Referral
Render a Diagnosis

- Odontogenic Pain
- Periodontitis
- Pulpal Necrosis
- Occlusion
- Temporomandibular Disorders
- Myofascial Pain
- Recurrent Aphthae/Herpes
- Trigeminal Neuralgia
- Atypical Migraine/Facial Pain/Odontalgia
The patient is entitled to any or all diagnoses.
Uncommon manifestations of common illnesses occur more commonly than common manifestations of uncommon illnesses.
When you hear hoof beats...
Main Subdivisions of TMD
- Myofascial
- Joint Pathosis
- Disc Displacements

Bruxism
Headaches
The key words to keep in mind about TMD treatment are "conservative" and "reversible." Conservative treatments are as simple as possible and are used most often because most patients do not have severe, degenerative TMD. Conservative treatments do not invade the tissues of the face, jaw or joint. Reversible treatments do not cause permanent, or irreversible, changes in the structure or position of the jaw or teeth.
The preponderance of the data does not support the superiority of any method for initial management of most TMD problems. Moreover, the superiority of such methods to placebo controls or no treatment controls remains undetermined. Because most individuals will experience improvement or relief of symptoms with conservative treatment, the vast majority of TMD patients should receive initial management using noninvasive and reversible therapies.
Therapies that permanently alter the patient's occlusion cannot be recommended on the basis of current data.
Pharmacotherapy

- Muscle Relaxants
- Anti-inflammatory agents
- Chronic pain medications
- Opioids
Muscle Relaxants

- Flexeril (cyclobenzaprine) 5 or 10 mg
- Zanaflex (tizanadine) 2 or 4 mg
- Robaxin (methocarbamol) 500 or 750 mg
- Norflex (orphenadrine)
- Skelaxin (metaxalone)
- Baclofen (lioresal)
- Soma (Carisoprodol)
- Valium (diazepam)
Anti-inflammatory Agents

- **NSAID**
  - Ibuprofen
  - Anaprox DS
  - Lodine (etodolac)
  - COX-2 inhibitors
  - Voltaren (diclofenac) gel/cream
  - Mobic (meloxicam)
  - Loading dose/blood level

- **Systemic corticosteroids**
  - Tapered dose
  - Prednisone
  - Medrol Dose pak

- **Capsaicin**
Chronic Pain Medications

- Amitriptyline
- Trazodone
- Cymbalta (duloxetine)
- Savella (milnacipran)
- Lyrica (pregabalin)
- Neurontin (gabapentin)
Opioids are for acute pain, not chronic pain
I rarely write for opioids—usually for breakthrough pain and as a one time only prescription
Watch out for analgesic rebound headaches
Hot /Ice Packs

- Some like it hot
- Some like it cool
- Some like both
- I think heat works better for muscle pain and cold works better for joint pain
Patient Exercises
Physical Therapy
Massage Therapy
Dependent upon diagnosis
If there is disc involvement, avoid PT
Splint Therapy

- Not first line therapy
- Muscle relaxation needs to be achieved before splint fabrication if possible
- Avoid disruption of growth and development
What is a splint??

- Inter-occlusal device
- Usually made of acrylic
- May have clasps
- By and large are custom made
- Occlusal guard
- Night guard
- Biteguard
- Occlusal Orthotic
- Craniofacial Orthopedic Appliance
Indications for Splint Use

- Myofascial Pain
- Parafunctional activities (e.g. clenching, bruxism)
Non-indications For Splint Use

- TMJ Arthralgia
- Asymptomatic Joint Sounds
- Articular Disc Displacements
- Repositioning the condylar head in the Glenoid Fossa
How does a splint work?

- Occlusal disengagement
- Vertical Dimension changes
- Maxillo-mandibular realignment
- Temporomandibular joint repositioning
- Cognitive Awareness
Preferences

- Maxillary vs. Mandibular
- Hard vs. Soft
- Night time vs. Day time vs. all the time
- Centric Relation vs. Centric Occlusion
Types of Splints

- Flat Plane Splint
- Repositioning Splint
- NTI Nociceptive Trigeminal Inhibition
Flat Plane Splint

- Maxillary or Mandibular
- Place on arch with fewest teeth
- Hard Acryllic
- 1.5 to 2.0 mm thick in posterior
- Even occlusal contact in habitual bite
- Canine guidance on excursive and protrusive movements
- Wear at Night; add during stressful times during day
Although noninvasive therapies are clearly preferred for most TMD problems, in the small percentage of patients with persistent and significant pain and dysfunction who show evidence of pathology or that an internal derangement of the TMJ is the source of their pain and dysfunction, and for whom more conservative treatment has failed, surgical intervention should be considered.
Counseling

- Psychological Counseling
- Psychiatric Counseling
- We need to find out about the magnitude of stressors, not the specifics
Referral

- Pain Management
- Oral and Maxillofacial Surgery
- Orthodontics
- Neurology
CC: “My tooth hurts”
Case Report

- 40 yo Caucasian female
- CC sore tooth and gingiva in left maxilla
- Numerous evaluations in area
- Had endo performed — no improvement
- Had crown placed — no improvement
- Some slight improvement with soft bite guard
- Receives some relief with 200 mg ibuprofen bid
PMH

- Heart murmur
- Hay fever/allergies/hives
- Pain in jaw joints
- Interstitial cystitis
- Anxiety
- GERD/Stomach ulcers
Current Medications

- Serax® tid
- Prevacid®
- Amoxicillin (pre-med)
- Penicillin for abscessed tooth
- Occasional ibuprofen
Discomfort
Aching
Sharp (sometimes)
Dull
Throbbing
Located in upper and lower jaw, upper and lower teeth, in the ear canal
Previous Treatments

- Bite adjustment
- Removable splint (two)
- Endodontic therapy #13 and 14
- Crowns

- Treatment success 0 on a 1-10 VAS
Clinical Findings

- Reactive anterior cervical lymph nodes
- Pain to palpation left SCM, L>R masseter
- Left posterior maxilla exhibits buccal buttressing; pain to palpation
- Left sided occlusion not balanced
- Gingival erythema Left posterior maxilla
Radiographic Findings

- Condylar heads normal
- Cloudiness on maxillary sinuses
- No gross caries or periodontal disease
- Slight alteration in trabecular pattern Left maxilla
- Possible root resorption DB root # 14
Clinical Impressions

1. Myofascial pain
2. Odontalgia secondary to occlusion
1. Adjust existing soft splint; increase wear to include daytime as tolerated
2. Rx Zanaflex® 2 mg i or ii hs
3. d/c Serax® until adapted to Zanaflex®
4. Ibuprofen 600 mg tid OTC
5. Return in three weeks
At recall visit

- 5/10 improvement with ibuprofen
- Gingiva in maxillary right posterior sextant extremely erythematous
- Rx Lidex 0.05% ointment
- Impression
- Allergy to new crowns???
Alterations to the Plan

- Pt couldn’t tolerate the lowest dose of Zanaflex
- Was nervous about discontinuing Serax
- Developed a GI Bleed from the ibuprofen
- Became violently ill after using Lidex ointment
Crowns from off-shore lab
Nickel content??????
Referred for patch test for nickel

After crowns removed, erythema resolved but pain didn’t....

CT maxilla--NSF
On exam, she was afebrile. Her lungs were clear. Skin exam did not show any rash.

Patch testing, using TRUE test with 23 allergens and allergen mixes including nickel sulfate showed a doubtful reaction with macular erythema only to colophony at the first reading in 48 hours, but no reactivity at 72 hours. There was weak reactivity to black rubber mix, the clinical relevance is unclear in this particular patient. There was no reactivity to nickel sulfate at 48 and 96 hours.

Impression:
1. Negative nickel patch test.

Results of the testing were reviewed with the patient. She will follow up with her dentist for further evaluation.
Transaxial and coronal sections were obtained at 3 and 5 mm intervals through the paranasal sinuses because of the pain over the left maxillary area after having several crowns and root canals on the left side. There is no congestion or drainage or cephalgia.

Scanning through the paranasal sinuses demonstrated small frontal sinuses. There is normal development of the maxillary, ethmoidal and sphenoidal sinuses. There is no mucoperiosteal thickening, fluid levelling or bony erosions. The turbinates demonstrate no enlargement of the middle turbinates. There is some mild prominence of membranes about the inferior turbinates, which have membrane thickening of 5 mm. There is no unusual airway obstruction. There is no bony erosion involving the sella turcica or orbits as visualized. In visualization of the teeth, there is the root canal involving the molars on the left with crowns also noted on both sides, but there are no signs of inflammation or bony erosions in this area. The floor of the left maxillary sinus appears normal.

**Impression:** Sinuses are clear. There is some minimal membrane prominence of the inferior turbinates, but not considered abnormal. No airway obstruction. There are no bony erosions involving the left maxilla.
Tricyclic antidepressants
  - Amitriptyline 10-50 mg hs
Trazadone
Gabapentin (Neurontin®)
EMLA® cream
Topical capsaicin
Topical amitriptyline/ketamine
Comprehensive Initial Assessment
Primary Care Setting or Specialty Care Clinic

- Characterize Pain Location, Intensity, Duration, Frequency, Onset, Precipitants
- Complete Risk Assessment (Universal Precautions, ORT, SOAPP)
- Take Detailed History (eg, Comorbidities, Prior Treatment)
- Clarify Pathophysiology
- Conduct Physical Examination
- Treat the Treatable (eg, Infection, Fracture)

ORT, Opioid Risk Tool; SOAPP, Screener and Opioid Assessment for Patients in Pain.
Marcus DA. Compr Ther. 2005;31:40-49.
Maxillary sinusitis - can cause pain or pressure in the maxillary (cheek) area (e.g., toothache, headache)

Frontal sinusitis - can cause pain or pressure in the frontal sinus cavity (located behind/above eyes), headache

Ethmoid sinusitis - can cause pain or pressure pain between/behind eyes, headache

Sphenoid sinusitis - can cause pain or pressure behind the eyes, but often refers to the vertex of the head
Atypical Migraine

- Throbbing
- Unilateral pain
- Sensitivity to light
- Sensitivity to sound
- Nausea and vomiting

Estrogen levels during menstrual cycle and pregnancy.
Uncommon manifestations of common illnesses occur more commonly than common manifestations of uncommon illnesses.
The neurologist knows everything but does nothing
The surgeon knows nothing but does everything
The psychiatrist knows nothing and does nothing
The pathologist knows everything and does everything, but too late
And the anesthesiologist sits on a stool all day long and passes gas.
Data Collection for the TMD Patient

SOMETIMES I FEEL THAT I HAVE THE WORST JOB IN THE WORLD!

YA...RIGHT!