American Association of Orthodontics
The Key to Excellence with
The Ortho-Pedo Connection

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Diplomate, American Board of Pediatric Dentistry

- Trauma from braces/toothbrush
- Sodium Laryl Sulfate- detergent in toothpaste
- Pyrophosphates in tartar control toothpastes
- Genetics
- Stress
- Autoimmunity
- Hematinic deficiency associated with low serum iron, folic acid, and vitamin B1, B2, B6, B12 from malabsorption
- Celiac Disease

Aphthous Ulcers

- Use toothpaste without Sodium Laryl Sulfate - SLS
  Rembrandt Canker Sore, Biotene, Tom’s of Maine, Sensodyne Original Flavor and Cool Gel, Squigle (xylitol w. fluoride)- Homestead Market 1-888-234-1906/www.Homesteadmarket.com
  - Orabase (Colgate)
  - Vitamin E

Vitamins

- Daily multivitamin supplements did not result in a reduction in recurrent aphthous stomatitis (canker sores).

- B 12 deficiency may be clinically evident with tongue depapillation.


Celiac Disease

- Gluten-sensitive enteropathy

- Permanent intolerance of gluten protein in wheat, rye and barley

- Damage to intestines causing malabsorption of nutrients

Dental Materials

- To check gluten contents:
  www.withoutthewheat.com/Dental Products.html
<table>
<thead>
<tr>
<th>Perleche/Angular Cheilosis</th>
<th>Streptococcal Pharyngitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Candida Albicans</td>
<td>• 10% have sore throat and fever</td>
</tr>
<tr>
<td>• Superficial exudative crust with ulcerated appearance</td>
<td>• Vesicles or ulcers suggest viral</td>
</tr>
<tr>
<td>• Saliva collects in folds</td>
<td>• Beefy red uvula or exudate suggests strep</td>
</tr>
<tr>
<td>• Riboflavin deficiency with superimposed fungal infection</td>
<td>• Not contagious after 24 hours of antibiotic therapy</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>• Nystatin Cream/Ointment 100,000 U/gm (15 or 30gm)</td>
<td></td>
</tr>
<tr>
<td>• Must treat for 48-72 hours after resolution of symptoms</td>
<td></td>
</tr>
<tr>
<td>• Change toothbrush</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maxillary Removable Appliances</th>
<th>Wind Instruments &amp; Occlusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clean with an ultrasonic cleaner (not just sonic)</td>
<td>• Playing a wind instrument is not a significant etiological factor in the development of a malocclusion.</td>
</tr>
<tr>
<td>• Retainer Brite (Kosher) SoniBrite, Efferdent, Polident</td>
<td>• Playing a brass instrument with a large cup-shaped mouthpiece may predispose a musician to develop a lingual crossbite or lingual crossbite tendencies.</td>
</tr>
<tr>
<td>• Soak in diluted bleach for 10 minutes</td>
<td></td>
</tr>
<tr>
<td>– 1 part scented bleach : 10 parts water</td>
<td></td>
</tr>
<tr>
<td>– Bleach bath lasts for about a week</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>When the Ab prescription is filled, two new toothbrushes should be purchased. One brush is begun 24 hours after beginning the antibiotic, and the other is begun upon completion of the antibiotic.</td>
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</tbody>
</table>
DECALCIFICATION
Most common complication of fixed orthodontic appliance therapy

White Spot Lesions (WSL)
“...subsurface enamel porosities resulting from carious demineralization that appear as milky white opacity on smooth surfaces.”


• Orthodontists, general dentists, parents and patients all agreed there is joint responsibility for prevention of white spot lesions.

• 17% of patients indicated that their parents were responsible for white spot prevention.

• 72% of parents felt they were responsible for prevention of white spots.

• 28% of patients did not recall receiving any instruction in the prevention of white spots.

• 55% of parents believed that the child should have had more instruction in prevention.

• 19% of parents indicated they would not or might not recommend braces to a friend if their child had white spots post treatment.

• 60% of orthodontists indicated that white spots made the teeth look “a lot worse”.

• “Orthodontists may feel frustrated because they cannot prevent the development of white spot lesions, especially in uncooperative patients.”


CRA
Caries Risk Assessment

Vs

DRA
Decalcification Risk Assessment
Decalcification Risk Factors

Ankyloglossia
High Lip Line
Incompetent Lip Posture
True Red Hair with Freckles
Wearing Glasses
Short Clinical Crowns
Poor Grooming

Asthma
GERD
Bulimia
Swim Team
Erosive Foods and Drinks
Social Stress- School/Family/Income Level
Prolonged Treatment
ADHD
Pregnancy with Emesis

Continually Disrupt the Biofilm

• Medications to treat asthma may decrease the secretion of saliva.

• Salivary reduction is associated with an increase in lactobacilli and increased caries susceptibility.

• Powdered inhalers have pH less than 5.5 (ph for hydroxyapatite dissolution).

• Fall in pH lasts about 30 minutes after use of the oral inhalers.


• Relaxation of the esophageal sphincter results in gastro-esophageal reflux with gastric acid pH 1.1

• Children with asthma are 5.5 times more likely to be diagnosed with gastro-esophageal reflux disease.

Improperly Maintained Pool Chlorination

- Rapid enamel erosion and staining occurs from the chemically treated swimming pool water.

- Low pH levels


Both original flavor and sour varieties of candy are potentially erosive, with sour candies having a higher erosive potential.
- Jolly Rancher  Malic Acid
- Life Savers  Citric Acid
- Mike & Ike  Citric and Malic Acid
- Twizzlers  Citric Acid


Sour Patch Kids

Soft drink intake, even of relatively short duration, can reduce enamel microhardness.

Soft drinks should be avoided during orthodontic treatment.


Critical pH

- The pH below which demineralization dominates and results in a net dissolution of tooth enamel.
- For most individuals, this pH is 5.5.


<table>
<thead>
<tr>
<th>Acid and Sugar Content of Some Common Beverages</th>
<th>pH</th>
<th>Gm sugar/12 oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery acid</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Lemon juice</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Coke</td>
<td>2.5</td>
<td>39</td>
</tr>
<tr>
<td>Pepsi</td>
<td>2.4</td>
<td>41</td>
</tr>
<tr>
<td>Sunny Delight</td>
<td>2.4</td>
<td>30</td>
</tr>
<tr>
<td>Snapple</td>
<td>2.4</td>
<td>27</td>
</tr>
<tr>
<td>Mountain Dew</td>
<td>3.1</td>
<td>46</td>
</tr>
<tr>
<td>Gatorade</td>
<td>2.7</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acids</th>
<th>pH</th>
<th>Gm sugar/12 oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welch’s White</td>
<td>2.8</td>
<td>37</td>
</tr>
<tr>
<td>Grape Juice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet Coke</td>
<td>3.2</td>
<td>0</td>
</tr>
<tr>
<td>Sprite/7 Up</td>
<td>3.3</td>
<td>26</td>
</tr>
<tr>
<td>Iced Tea w/o</td>
<td>3.8</td>
<td>0</td>
</tr>
<tr>
<td>Apple Juice</td>
<td>3.2</td>
<td>23</td>
</tr>
<tr>
<td>Orange Juice</td>
<td>3.8</td>
<td>46</td>
</tr>
<tr>
<td>A&amp;W Rootbeer</td>
<td>4.8</td>
<td>46</td>
</tr>
<tr>
<td>2% Milk</td>
<td>6.8</td>
<td>16.5</td>
</tr>
<tr>
<td>Tap Water</td>
<td>6.7</td>
<td>0</td>
</tr>
</tbody>
</table>
Propel Grape                   2.98  
Gatorade                            2.92-3.08  
Powerade                    2.76-2.86  
5 Hour Energy                   2.81  
Red Bull                              3.37  
Red Bull Sugar Free           3.27


• The addition of calcium to 100 percent juices decreases enamel erosion.

• Recommend calcium-fortified juice to patients who are at risk for enamel erosion.


• Hypothalamic pituitary adrenal cortical secretions are increased with financial stress and low socioeconomic status.

• High risk caries was associated with high salivary levels of cortisone.

• Enamel surfaces were thinner & softer.


Attention Deficit Hyperactivity Disorder - ADHD

Most common developmental disorder among school children.


• Managed with oral drugs:

Stimulants to increase the production of dopamine and norepinephrine

– Ritalin- taken 2-3 times/day
– Concerta- long acting up to 12 hours
– Adderall
– Strattera

• Neurobehavioral syndrome
  – Inattention
  – Impulsive and/or over-activity
  – Learning problems
  – Poor peer relationships
  – Low self esteem

• May need two doses per day
• Long-acting and extended
• Do not appoint first-thing in am or last in pm
• Sometimes take a “drug holiday” due to some slowing of growth related to height and weight

• More orthodontic emergencies--especially lost retainers
• Use fixed or non-compliant appliances
• See more often
• Prophy more often
• Problem with time perception- Toothbrush with timer or brush for one song

• Children with ADHD experience a higher incidence of traumatic dental injuries.
• Timing for orthodontic treatment of at-risk maxillary permanent incisors should be considered.


“Gone are the days when the development of cavities is tied generically to consuming too much candy, not brushing enough, or not getting enough fluoride.”


• Despite the lack of any preventive care program or additional fluoride, 50% of patients had resistance to decalcification/white spot lesions.


White Spots
• Show what the patient started with.

• Record in the patient’s chart the white spots or decalcification that is present prior to beginning treatment.

• Show to parent and child.
First Visit After Banding

• White spots can form within 4 weeks.

• For patients with high risk, consider first visit after banding in 3-4 weeks rather than than 6-8 weeks.


• Decalcification at the gingival margin is a sign of an active carious process even in the absence of frank cavitation.

• The carious process may be suspended via remineralization with active intervention.


Have a Plan

• DRA and a targeted preventive care regimen to control the biofilm.

• Harden the enamel to prevent dissolution. Mineral loss with pH less than 5.5.

• Add a protective layer or coating to the enamel.

Spin/Power Brush

• Oscillating-rotating technology removes more plaque and decreases gingival recession.

• Philips Sonicare

• Oral-B Triumph

• Power brush removed 12-18% more plaque than toothbrush with brushing performed by a dental hygienist.

• Significantly more plaque removal at 1 and 2 minute intervals with power brush.


• High caries risk adolescents undergoing orthodontic treatment should be using a 5000ppm toothpaste.

### Modified Fluoride Toothpaste Technique: MFTT

- Spread 2cm of fl toothpaste evenly in both arches.
- Brush for 2 minutes. Do not expectorate.
- Sip of water and filter the slurry of toothpaste and water in between the teeth for 30 seconds.
- No further rinsing and no eating or drinking for 2 hours.
- Brush twice a day.

- This method increased the fluoride concentration and prolonged contact of fluoride with the teeth.
- With the slurry, there was more even distribution of the dentifrice.
- Not eating for 2 hours permits longer exposure for the elevated fl concentration.


### CPP-ACP

**Casein phosphopeptide and amorphous calcium phosphate**

**RECALDENT™**

- CPP is a milk derived phosphopeptide that binds calcium and phosphate to enamel.
- Bio-available ratio of 5 CA: 3 Phosphate: 1 Fl
- Exact same ratio as healthy enamel

- CPP/Casein phosphopeptide keeps calcium, phosphorus and fluoride in ionic form in solution, so ideal as remineralizing agent for enamel.
- Contraindicated for sodium benzoate or milk allergy due to casein but ok for lactose intolerant.
- Gluten free.

### MI Paste to Prevent Demineralization

- Patients undergoing orthodontic treatment.
- Used MI Paste Plus or placebo paste in fluoride tray for minimum of 3-5 minutes each night after brushing.

- MI Paste decreased the number of white spot lesions already present and helped prevent development of new WSL.

• Only sold on on-line pharmacy
• Can be sold in practice

Order from Mountainside Medical
www.mountainside-medical.com

Fax or scan with office phone # on rx.
800-323-7063

• Rinsing the mouth with a fluoridated rinse assists in caries prevention by elevating oral fluoride levels.

• Rinsing with a rinse that does not contain fluoride after brushing will significantly reduce salivary fluoride concentration.


• ACT and Fluorigard 226ppm

• Phos-Flur 200ppm plus phosphoric acid 22x stronger than ACT or Fluoriguard

• LISTERINE TOTAL CARE ZERO
  • Phosphoric acid for enhanced fl uptake
  • 221ppm fluoride

• When flossing is compromised by orthodontic appliances, an interproximal brush should be recommended.


• Elastic ligature ties imbibe fluoride and may function as fluoride reservoirs slowly releasing fluoride adjacent to the brackets.


• One application of fluoride varnish placed around orthodontic brackets can reduce enamel demineralization by 40% over a three month period.

• Application every three months has been recommended.

Pit & Fissure Sealants

- Sealants applied from the gingival surface of the bracket to the free gingival margin.
- Effectively sealed the enamel surfaces adjacent to orthodontic brackets.

- Ultraseal XT Plus (ultradent) provided significant reduction in enamel demineralization adjacent to orthodontic brackets.


- Opal Seal- 38% filled with glass ionomer and nano-fillers
- Placed on enamel prior to bonding bracket
- Compatible with any bonding system
- Light-cured
- Fluorescing properties—detectable under a UV black light
- Reduces need for patient compliance.

  Ultradent

- L.E.D. Pro Seal- Light-cured filled sealant placed around orthodontic brackets.
- Significant reduction in demineralization and the barrier was not reduced with toothbrush abrasion.
- Reduces need for patient compliance.


Opalescence Treswhite Ortho

- Whitens around and under brackets
- Eliminates bacteria
- 8% hydrogen peroxide to whiten
- $43.99 for box of 10
- 12 month shelf life

- The use of five xylitol lozenges per day resulted in higher plaque pH and reduction in the risk of demineralization during fixed orthodontic treatment.

After Debanding

• Only 40% of white spot lesions improved in the first 6 months following debanding.

• Give a few weeks time for white spots to regress with the calcium and phosphate in the saliva.


Go Slowly at First

• Allow slower fluoride penetration initially to permit remineralization from the base of the lesion to the outer surface.

• Remineralization can occur from saliva or with low concentrations of fluoride.

Hamdan AM, Maxfield BJ. Tufekci E et al. Preventing and treating white-spot lesions associated with orthodontic treatment. JADA 2012;143:777-783.

Chewing Gum

• Increases the production of saliva supersaturated with calcium, phosphate, and hydroxyl ions by up to 10 times the normal rate.

• Assists in remineralization of enamel.

• Boosts the ability to neutralize and buffer plaque acids.

• Assists in clearing food residues.

Sugar-free gum provides higher salivary bicarbonate ions with stimulated saliva.

The positive effect of the bicarbonate ions is nullified in the process of buffering the acid formed from gum sweetened with sugar.

Cariogenic microorganisms can “learn” to metabolize sorbitol when their sugar supply is diminished.

These same microorganisms starve with xylitol because xylitol can not be metabolized by the cariogenic microorganisms.

• Xylitol suppresses and inhibits S. mutans.
• Unlike sorbitol, xylitol is not fermented by S. mutans or S. sobrinus.

Hildebrandt GH, Sparks BS. Maintaining mutans streptococci suppression with xylitol chewing gum. J

Xylitol Gum
• Chew 4-5 times per day for 5 minutes
• 0.7-1gm/pc
• High Caries Risk: 7gm/day
• Moderate Caries Risk: 4gm/day
• Children can tolerate up to 45gm/day

• Gum containing Recaldent (casein-phosphopeptide amorphous calcium-phosphate) reduced interproximal caries progression by 17%. (Trident Xtra Care)

• Chewed three sticks/day five days/week and used Fl toothpaste.


• Study group, age 12-18 years of age, used 1gm of CPP-ACP morning and night for 12 consecutive weeks after using a 1,000ppm fluoridated toothpaste.

• CPP-ACP paste significantly reduced white spots.


• After braces removed, MI Paste Plus (900ppm Fl) used for 8 weeks or a single application of PreviDent fluoride varnish to WSL.

• Neither MI Paste Plus nor fluoride varnish were more effective than normal home oral hygiene to improve WSL over an 8 week period.


MI PASTE at home for WSL
• Apply with finger or Q-Tip to WSL.
• Leave in place for 5 minutes.
• Do not rinse/eat/drink for at least 30minutes.
• Do not use overnight in custom tray/ortho retainer because teeth become dehydrated, making WSL more noticeable.
• Apply at least 2 times each day for a minimum of 5 minutes.
• One can not overuse MI Paste.
**ICON INFILTRATION CONCEPT**

**INCIPIENT INTERPROXIMAL CARIES AND WHITE SPOTS**

DMG AMERICA

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**Bleaching**

- The surrounding enamel may be whitened, camouflaging WSL.


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- HCL acid to open lesion. Low viscosity resin is drawn deep into the pore system. Similar to a sponge drawing up liquid.

- The resin completely fills the pores, replaces lost tooth structure.

- The white spot disappears, the anatomical shape and color of the tooth are not altered.

DMG America

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- Hydrogen peroxide releases 50% in the first 30 minutes.

- Pulpitis may occur. Enamel is semipermeable and bleach seeps through dentin to pulp.

- 5000ppm toothpastes (not with WSL), MI Paste or toothpaste with potassium nitrate will decrease sensitivity.

- Can put in bleaching tray for 10-30 minutes before or after bleach.

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**Tray**

- Does not have to cover the entire crown.

- Bleach travels up the entire crown due to the diffusion gradient.

- 30 minutes to one hour a day is adequate for young patient.

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**10% carbamide peroxide**

- Cost
- Safety
- Efficacy
- Most all safety data on 10% CP
- 18 months shelf life
Autism Spectrum Disorders

• Autism Disorder
• Asperger Syndrome
• Pervasive Developmental Disorder

AUTISTIC DISORDER
Brain based developmental disorder

• 1:150 children 2007
• 1:110 children 2009
• 1:88 American children
• 1:54 boys
• Same methodology being used
• Extreme variations in IQ, speech & functioning

• Debate as to genetic defects, environmental factors or combination of both factors.
• Some suggest an immunological component.
• But truly is a debate at this time.

Diagnosis
• Primarily on behavioral observation
• Focus on mouth not eyes
• Onset prior to age 3
• Pediatricians now routinely screen at age 18 and 24 months

Prior to Visit
To access cooperative potential

Can she sit for a haircut? (ADHD too)
• Are there any strong fears?
• How does he communicate? Sign?
• What is his best time of day?

Calming Devices

• Lead weights, lead apron
• Earphones/headphones
• Movie


• May exhibit over-responsiveness to sensory stimuli.
• Eliminate or reduce environmental sensory stimuli
  – quiet
  – suction
  – phones
  – music (but also may help)


• There are no evidence-based techniques for behavior modification that can manage the problematic behaviors of children with ASD in the dental environment.


Involve the Parent/Therapist

• Parent can come to the office and take digital photos to make an album for the child of office, staff & doctor.
• Ask parent about cues for tolerance level.

Medications & DRA

• Psychotropic medications cause xerostomia.
• If accompanying seizure disorder, anti-seizure medications cause gingival overgrowth and xerostomia.
ASPERGER SYNDROME

highest functioning form of autism

- Unlike Autism, no delay in language, cognition, self help skills or adaptive behavior
- Better language acquisition-”talk before walk”
- Prevalence more common in males
- Majority diagnosed between 5 & 9 yrs

- Robotic, flat modulation with raspy voice
- Difficulty in reading non-verbal social cues
- Can perform own oral hygiene
- Often off task because of own agenda

Rada RE. Controversial issues in treating the dental patient with autism. JADA 2010;141:947-953.
Friedlander AH, Yagiela JA, Paterno VI, Mahler ME. The neuropathology, medical management and dental implications of autism. JADA 2006;137:1517-1527.

www.autismspeaks.org

Obtaining Consent for Treatment

- Brochures or articles--not so good
- Photographs
- Example appliances
- Dolphin Aquarium Videos

Two weeks after detailed explanation for informed consent, 40% of parents could not answer questions regarding their children’s treatment and proposed procedures.

The Adolescent
- Not good at delaying gratification
- Explanation better than criticism
- Reactive
- Give lots of choices

Parental Presence
- Want to see first-hand what is occurring.
- Believe they can improve child’s behavior.
- Can use parental presence to provide additional information regarding treatment: Decalcification risks or oral hygiene concerns.

We need Angel’s undivided attention, and we want to give our undivided attention to Angel. You may come to check on Angel any time you wish. We shall let you know immediately if we feel things would go better with your presence.

Your mere presence provides support.