A Little Prevention Goes a Long Way
Trying to change parents and kids behavior (while keeping your sanity)

The Ten Killer Questions

• "What do you mean that I should have brought my child in between 18 and 24 months?"
• or: "My pediatrician didn’t tell me that."

The Answers

• The AAPD recommends the first visit when the first tooth erupts or sooner
• Provide counseling via risk assessment
• Nutrition and diet review
• Safety check
• Note that the pediatrician may see a child 15 times before the child visits the dentist
The Answers

• General Dentists and Pediatricians need to be trained in identifying and diagnosing oral diseases including hard and soft tissue pathoses
• They are part of the team responsible for the “Dental Home” and fluoride applications
• See www.AAP.org/oralhealth

Caries Risk Assessment

• History
  • medical
  • dental
  • social
  • fluoride
• CAT: caries assessment tool; AAPD
  • Minimum, moderate, severe

Definitions

• Cavity: a hole in a tooth; may be developmental or bacterial
  • +/- surface cavitation
• Caries: a biofilm mediated transmissible, bacterial disease
• Early Childhood Caries: caries of infants, toddlers, and young children affecting one or more teeth

Early Childhood Caries

• Early childhood caries (ECC) is the presence of 1 or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger.
• In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC).
• From ages 3 through ≤ 5, 1 or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth, or a decayed, missing, or filled score of ≥4 (age 3), ≥5 (age 4), or ≥6 (age 5) surfaces constitutes S-ECC.

Caries Risk Assessment

• Many available
  • AAPD www.aapd.org
  • CDA CAMBRA www.cda.org
  • ISDAS
  • Even the pediatricians are claiming this area
  • www.aap.org/oralhealth/cme
• All provide a systematic approach and a pathway for diagnosis and treatment
  • Decide how complicated you want to be
  • Must be recorded!

CDC Report on Oral Health

• 2014
• Increase in caries rates in preschoolers
  • 23% will demonstrate ECC
• Stabilized rates in elementary and middle schoolers
• Increased rate in high schoolers
Sugar doesn’t cause cavities - acid does!

- Mutans strep and Lactobacillus make acid
- 5 fruits to an 8oz. glass of juice
- Approx. 1 tsp = 5 g sugar
- 12oz. Sodas=19g. of sugar
- 12oz. Juice Blast=48g. of sugar
- Carbonic acid/Phosphoric acid/Citric acid
- The two hour rule

Biofilms!

- 80% of infectious diseases are biofilm mediated
- Multiple organisms interacting
  - Can be benign individually; together wreak havoc
    - P. gingivalis
- Traditional treatment
  - Antibiotics
  - Mechanically debride
  - Opens up avenues to other potentially pathogenic at
- New treatment
  - Change environment and ecology
    - Unfermentable sweeteners
    - Prevent adhesion of biofilms
    - Xylitol
    - Money
    - Change pH
      - Agarase, etc.

Erosion v Decay

- Erosion: physiologic wear from mastication
  - Normal!
- Abrasion: pathologic wear of teeth from mechanical rubbing
  - Brushing, toothbrush and toothpaste wear
  - Brush lightly not hard - bristles don't move!
- Erosion: pathologic wear from chemical dissolution
  - Acidic foods/drinks, GERD

Attrition, Abrasion and Erosion

- Saliva: the wonder drug
  - Neutralizes acid with phosphate buffer returning oral cavity to basic environment
  - Stops demineralization
  - Promotes remineralization
  - Contains Ca++, PO₄, OH and F (exogenous)
    - Remineralizes early decalcification in a basic environment
  - Antibiotic/antiviral
  - Enzyme system that breaks down food especially carbs to simple sugars!
  - Washes away food substances
  - The more the better!!!!!!

Caries is Multifactorial!

- Table: Erosion and erosion of enamel of the tooth surface
  - Acidic foods/drinks, GERD
### Treatment Modalities

- Habit/Diet/Frequency of eating
  - Decrease fermentable carbohydrate and sugar content
- Remove/disrupt biofilm
- Alternative Medicine Therapies - not tested/approved
  - Ozone
- Oil Pulling (coconut oil)
- Chemotherapy
  - Ablative topical application
  - Posts/crowns
- Oral hygiene
  - Antimicrobial mouth rinse
  - Chlorhexidine gluconate
  - Silver diamine fluoride
  - Antimicrobial mouth rinse (fluoride releasing)
  - Licorice pops
- Definitive treatment

### Oh No!!!

- Proceedings of the Symposium on Innovations in the Prevention and Management of Early Childhood Caries
  - Oct. 23-24, Ellicott, MD
- Evidence of Effectiveness of Current Therapies to Prevent and Treat Early Childhood Caries; S. Twetman, V. Dhar
  - 377 reports, 33 met criteria
  - Fluoride toothpaste and varnish: insufficient evidence
  - Fluoride tablets and drops: insufficient evidence
  - Silver diamine fluoride, Xylitol, Chlorhexidine varnish/gel, Povidine Iodine, Probiotic Bacteria, Remineralizing agents (ACP-CP): insufficient evidence
  - Sealants, restorations, regular restorations: insufficient evidence
  - THERE IS NO EVIDENCE THAT ANYTHING WE DO WORKS!!!

### Flossing Demo from Ouija (2013)

### The Ten Killer Questions

- “Do you really have to do that?”
- Or “Aren’t they going to fall out anyway?”

### The Answers

- Yes, they do
- There is an infection in the tooth that must be cured
- Baby teeth are important for:
  - eating
  - maintaining space for the permanent teeth
  - speech
  - growth and development of the face and arches

### Restoring Primary Teeth
Caries in Primary Teeth

- Into dentin
- No pulp involvement
- Arrest caries
- Silver Diamine Fluoride
- Restore caries
- GI/RMGI
- Composite
- Amalgam
- Full coverage
- Pulp involvement
- Pulp therapy
- Glass Ionomer
- Restore caries
- Extraction
- Space problem
- Orthodontic consult
- No space problem
- No space maintainer
- Space maintainer
- Into enamel
- Chemotherapy/Remineralization
- Fluoride rinse
- Fluoride varnish
- Glass Ionomer

Monitored Decay

- Watchful waiting
- Diet control
- Fluoride use
- Varnish
- Mouthrinse
- Water
- Atraumatic Restorative Technique (ART)/Interim Restorative Technique (IRT)/Interim Therapeutic Restoration (ITR)
- Partial caries removal
- Placement of glass ionomer restoration
- Cariostatic
- Similar to Indirect Pulp Cap
- And What About Old Technology?!?

- Silver Nitrate
  - Silver is a natural antibiotic
  - 1000 BCE to treat water
  - Silver sulfadiazine used to treat syphilis and canker sores
  - More effective than mercury containing compounds
  - Non-toxic
  - Has cariostatic effect
  - Can be mixed with fluoride and gives superior results
  - 38% Silver Diamine Fluoride (Advantage Arrest)
  - 253870ppm Ag+ + 44800ppm F-
  - JDR, Feb 2009, Vol88:2, pp116-125, pp446-447
  - Ann Clin MicroBio and Antimicrobials Feb 26, 2013
  - 1.73X as effective as IRT (85% v 43.4% caries arrest)
  - Costs pennies to use
  - Leaves black crust which can be covered by GI
  - Alternative may be Silver Iodide (white crust)

- The Ten Killer Questions

  - "Aren’t silver fillings bad for my child?"
  - Or: “Don’t you have anything else?”

- The Answers

  - There are no studies that definitively prove a link between alloys and any disease
  - A very small percentage of patients may exhibit a Hg allergy
  - Removing alloys increases Hg in the blood for a period of time
  - Composite as an alternative is acceptable in children as well as adults
  - Bis-phenol vs. Bis-GMA sealants
  - Recommended rinsing following placement

- GI v RMGI v Composites

  - Chemical composition
    - GI: polyacrylic acid and fluor alumino silicate glass cleaved by HF
    - Composite: resin based matrix with a silicate filler and photoactivator
    - BMA (bisphenol A v Bis GMA (bisphenol A glycidyl methacrylate) or other dimethacrylate molecules

  - Structure
  - Bonding
    - Chemical v mechanical
    - Wear resistance
    - Shear strength
    - Pulp response
    - F release
Bioactive/Bioactivity

- Marketing not scientific

Pain Control in Children

- Necessary for successful treatment
- Poor pain control often misinterpreted for disruptive behavior
- Requires special understanding of physiology and psychology of children

Pain in Children

- The response to the sensation of pain is often confused for disruptive behaviors
- May be socialized but is real
- Must be recognized as an important entity
- Changes in physiologic parameters
- Difficult to assess in children under 6
  - Use observation
- Self reporting in children over 6
  - Pain scales
  - It is the key to a successful treatment (child and parent)

Use topical and make it red

- Ester anesthetic
- Hides the color of blood
- Numbs mucosa but not much deeper
- Still requires distraction and clenching
- Optimum time 1-3 minutes
- Don’t use too much
  - Risk of methemoglobinemia

Don’t waste your money on expensive anesthetics

- 2% Lidocaine with 1:100000 epi
  - Wide margin of safety
  - Full mouth with two carpules
  - Lasts too long?
  - Amide anesthetic
    - Metabolized in the liver
    - High pKa therefore slower dissociation to free base
    - Infection has lower pH: limits free base
- 4% Articaine with 1:100000 epi
  - Amide/ester
  - Transient methemoglobinemia

Don’t block children under 8 or use a full carpule

- Porous bone
- Teeth clenched
- Move needle along alveolar bone
- Interdental
- Never do a “long buccal”
  - 1 hour anesthesia time
  - Controlled by volume
Peripheral Sensory Nerve Conduction

Anesthetic solution must cover 3 nodes (≥ 3 mm) to block nerve impulse.

Protein bound section active here blocking Na⁺⁺ channels.

Commonly Used Local Anesthetic Agents

Dose Recommendations from AAP/AAPD

<table>
<thead>
<tr>
<th>Drug</th>
<th>Medical Use (mg/kg)</th>
<th>Dental Use (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine</td>
<td>7.0</td>
<td>4.4</td>
</tr>
<tr>
<td>Mepipacaine</td>
<td>7.0</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Factors Contributing to Increased Risk of Local Anesthetic Overdose

- Failure to calculate LA dose by weight
- Treating multiple quadrants at one appointment
- Failure to use LA with vasopressor
- LA administered in all quadrants at one time
- Concomitant use of sedation, especially opioids
- LA administered as standard volume per injection
- Selecting a high-concentration solution

Moore’s Rule of 25

- One cartridge/25 lbs (11 kg) body weight
- Any marketed local anesthetic used in dentistry
- Establishes a conservative dose

Examples:
- 50 lbs (22 kg) 2 carpules
- 75 lbs (33 kg) 3 carpules
- 100 lbs (44 kg) 4 carpules
- May be too conservative in preschool child
- More accurately, 1 carpule/22 lbs (10 kg)
- mg/kg calculation provides greater accuracy


Local Anesthetic Volume Administered

“For children under 10 years of age, it is rarely necessary to administer more than one-half cartridge (20 mg), even for mandibular blocks.”

Astra Pharmaceuticals Package Insert, 1997

Anesthesia Techniques in Children

- Short needle
- Smaller amount
  - Diffuses over a larger relative area
  - Less mylenization
- As few teeth and soft tissue areas affected as possible!
Infiltration Technique

Influence of pH

- Most LAs are weak bases
  - $pK_a$ 7.5-9.5
- Only the base form can diffuse rapidly into nerve
- A high $pK_a$ means slower dissociation to free base
- Clinical result in onset of anesthesia?
- Tissue acidity lowers pH locally
  - Limits formation of free base
  - Leads to ionic entrapment in extracellular space

Buffering Local Anesthetics

Problems

- Pain from the pH incompatibility of local anesthetic and vasopressor with local tissue pH
- LA: pH 5-9
- Vasopressor: pH 3.5
- Tissue injury
- Latent uptake until pH “normalizes”
  - At acidic pH LA exists in non lipid soluble ionized form therefore unavailable to cross to nerve
- Infection lowers tissue pH

Buffering Local Anesthetics

Benefits

- Increases amount of lipid soluble active non ionized form
  - From pH 3.5 to buffered 7.4 there is a 6000 fold increase in lipid soluble form
- Patient comfort
- More rapid onset
- Decreased injury to tissue
- $\text{CO}_2$ release from HCl interaction with NaHCO$_3$ may potentiate action of LA and have its own anesthetic effect

Buffering Local Anesthesia

Armamentarium

- 8.4% NaHCO$_3$ available as 4.2g/50ml H$_2$O
- Tuberculin Syringe
- Alcohol wipes
- L.A. carpule: 1.7ml with epi 1:100000 or 1:200000
- Lasts about 1 week
  - Do before use

Buffering Local Anesthetics

Technique

from: youtube.com
And the Complications...

A Few Days Later

Use a rubber dam for all restorations

- Nothing worse than fighting lips, tongue, cheek in a gagging child
- 2 hole slit stretched over quadrant
- 2A, 8A, 00, 14A
- Wedges
- Or use isolation device
  - Mr. Thexy
  - Isolite
  - Optralite

Use a mouth prop

- The always useful mouth pillow!
- Helps the child relax
- Prevents unwanted “Code Red”
- Passive placement, not forced

Don’t extend for prevention

- G.V. Black had it all wrong!
- Small bonded restorations that preserve tooth structure
- Seal all vulnerable grooves
- Composite v. GI v RMGI
  - Wear resistance and acid dissolution
  - May need to cover GI and RMGI with composite

Use Metal Matrices

- Not plastic
  - Will have uncured layer of resin next to the band
Spot weld your matrices

• For back to back preps
• Use metal strips, not plastic

Use two curing lights

• Faster/Thicker/Faster!
• More light & multiple cure directions
• Material draws up to light direction
• Still the most reliable at 40sec.
• Always use large tip
• Must get 70% cure rate for maximum strength
• Or just buy a brighter light...
• Does not lead to increased shrinkage
• Cure in 5-8 seconds
• Always check for compatibility with material
• Watch angulation

Other Composite Op Tips!

• Place a flowable material in the proximal box and then pack your composite into it:
  • allows better adaptation and a little more resiliency at the margins
• Use a burnisher (not a plugger) to place and smooth composites
• Opaque/whiter materials need more light
• Bulk fill composites cure more thoroughly but most wear more rapidly
• Trim using 12 fluted carbide flame and barrel shaped burs and a
  • graphtite trimmer
• When restoring a pulpotomized tooth, separate eugenol or silicone based materials from the composite by placing a layer of glass ionomer
• No advise on the bruxer/GERD child:
  • The tooth flex and the composite is stiff
  • GI will give but also erode

Stainless Steel Crowns v. Composite

Stainless Steel Crown Rule #1

• You fit the tooth to the crown not the crown to fit the tooth
  • Even more so for cosmetic crowns

Anterior and Posterior Esthetic (and not!) Restorations

• Composite
• Stainless Steel Crowns
• Stainless Steel Crowns with composite windows
• Stainless Steel Crowns powder coated in white
• Stainless Steel Crowns with bonded acrylic or composite
• Strip crown or Pedoform full coverage composite crowns
• Preformed composite crowns/ polycarbonate crowns
• Silicate preformed crowns
• Ceramic Crowns (EZPedo)
Anterior Esthetic Restorations

Stainless Steel Anterior Crowns with Composite Facings


Resin Bonded Stainless Steel Crowns

• From Cheng Labs
• From Kinder Krowns
• From NuSmileCrowns

Zirconium Presized Crowns

• EZPedo
• NuSmile

Composite Strip Crowns

3M ESPE
Appliance Therapy/SML
Posterior Composite Crown

Extraction Alternative: Pedi Bridge

Modified Posterior Sandwich Restorations in Primary Teeth
- Sandwich Preparation
  - Fluoride releasing G.I. next to incipient lesion covered by wear resistant composite
  - Appropriate on proximal lesions in primary teeth
  - Extremely appropriate on distal lesions on 2nd primary molars abutting a permanent molar

And How About Sealants?

* Thanks Dr. Buonocore!
Reasons for Initial Caries in the Occlusal

- Mineralization defects
- Fissure morphology
- Lack of self cleansing
- Inability of mechanical cleansing

Indications

- Pit and fissures in molars and premolars
- Primary and permanent teeth
- Linguals on anteriors
- Geminated or fused teeth

Sealing Systems Currently Available

- Resin based bonded sealants without fluoride
- Resin based bonded systems with fluoride release
- Self-etching resin systems
- Glass ionomer systems
- Flowable composite over bond
  - Low fill: more shrinkage and leakage
  - High fill: less shrinkage
- Needed: ion flow system with remin. capabilities!

Flash:
GI Sealant Systems Useful?

- Resin seals:
  - Higher retention rate with grooving
  - 32% loss at 2 years
- GI seals:
  - Higher retention rate without grooving
  - 40% loss at 2 years
- Caries rates at 2 years
  - Resin:
    - With grooving 9%
    - Without grooving 19%
  - GI:
    - With grooving 4%
    - Without grooving 8%
- Pediatric Dent 2012; 34: pp46-50

Sealants Fail Because...

- Overetching
- Decay in grooves
- Moisture and other contaminants in grooves or on surface
- Air bubbles or pockets
- Dislodgement from occlusion
- No ion transfer prevents remineralization

Pulp Therapy
Primary Tooth Pulp Therapy

- Caries Control
- Pulpotomy
- Partial Pulpectomy
- Pulpectomy
- Extraction

Pulp Therapy Rule #1

- The pulp chamber in primary teeth is always in the middle of the occlusal surface

Primary Tooth Pulp Therapy

- Caries Control
  - Active decay
  - Elicited pain
  - Absence of soft tissue findings
  - Absence of radiographic findings
  - Absence of mobility

- Pulpotomy
  - Active decay
  - Elicited or spontaneous pain
  - Absence of soft tissue findings
  - Absence of radiographic findings
  - Absence of mobility
  - Controllably hemorrhagic pulp
  - Infected coronal and radicular pulp

- Pulpectomy
  - Rarely effective
  - MTA/Biodentine
  - Not Theracal

- Caries Control/Indirect Pulp Cap
  - Partial removal of decay
  - Palliative and hydroscopic material
  - ZOE
  - Ca(OH)₂
  - Light-cured Theracal
  - IRM
  - Glass ionomers
  - Return for definitive pulp therapy and restoration (sometimes! Not always)

- Direct Pulp Cap
  - Rarely effective
  - MTA/Biodentine
  - Not Theracal

Primary Tooth Pulp Therapy

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Vitapex

- One word for successful pulpotomies and pulpectomies
-Calcium hydroxide
-Silicone oil*
-Iodophor paste
-Wonder drug?
- Are the results clinically better?

Mineral Trioxide Aggregate

- MTA is a cement composed of tricalcium silicate, dicalcium silicate, tricalcium aluminate, tetraalcum aluminoferite, calcium sulfate and bismuth oxide (modify setting properties)
- Alkaline similar to calcium hydroxide explaining properties
- Antibacterial?
- Mix powder with sterile water and pack into area with condenser or tool. Area should be moist to aid setting
- A hour set
- Use under SSC or GI then cover with composite
- Strength equal to RM, seals better than amalgam
- Histologically induces dentinogenesis and cementogenesis with little inflammatory response
- Nonresorbable
- Expensive as a dental material, cheap as Portland cement

Two Basic Formulations

- ProRoot by Dentsply Tulsa
- Changes tooth color
- Requires lining coronal section with bonding agent to block dentinal tubules

- Biodentine Septodont
- Tricalcium Silicate
- Color stable
- Approved by FDA for pulpotomies
- Can place composite directly over without flex after 15-30 minutes

Primary Tooth Pulp Therapy

- Mycobacterium abscessus facial cellulitis
  - 30+ children in Atlanta
  - 40+ children in Anaheim
- Hospitalized following pulpotomy procedures
- Multiple antibiostics
- MA normal bacterium in water lines
- Iron is essential nutrient
- Ferric sulfate for hemostasis?
- Water line cleanliness
  - Use only sterile water

Achieving Hemostasis

- Slightly moist cotton pellet and pressure
- Cotton pellet dipped in fibrin
- Electrocautery/electrofulguration
- Cotton pellet dipped in astringent
- Ferric sulfate
- Acetone
- Ferric chloride
- Aluminum chloride
- Hemostatic?
- Gels
- Aluminum chloride
- Racedent thermogel (Septodont)
- Traxodent (Premer) Absorbs moisture and constricts vessels

Irrigating and Cleansing Solutions

- NaOCl
  - Antibacterial
  - Dissolves organic material
  - No effect on dentin walls
  - Does not remove smear layer
  - Periapical damage to forming teeth and soft tissues
- Chlorhexidine 2%
  - Potent antiseptic agent gm+<gm
  - Affected by pH
  - Cannot dissolve organic tissues or smear layer
  - Can form parachloranilene in presence of NaOCl (a carcinogen)
- Ethylenediaminetetraacetic Acid (EDTA 17%)
  - No antibacterial activity
  - Dissolves organic smear layer
  - Alternates with NaOCl
Primary Tooth Pulp Therapy

• Pulpotomy
  • Remove ALL decay
  • Remove roof of pulp chamber
  • Extract coronal pulp
  • Achieve hemostasis
    ▪ Cotton pellets
    ▪ FeSO$_4$/AlCl$_3$/astringent
    ▪ Apply blended formocresol pellet for 5 minutes
  • ZOE/IRM/Vitapex dressing/GI cover if bonded restoration
  • MTA!! (no formocresol/+/FeSO$_4$/GI cover if bonded)
  • Full coverage restoration/bonded restoration

Primary Tooth Pulp Therapy

• Why pulpotomies fail...
  • Define FAILURE!
  • Failure to remove entire roof of pulp chamber
  • Failure to remove all coronal pulp and pulp tags
  • Failure to achieve hemostasis
  • Failure in diagnosis
    ▪ Necrotic pulp
    ▪ Infected and hemorrhagic pulp
  • Failure to maintain clean field/place appropriate nonleaking restoration

Primary Tooth Pulp Therapy

• Partial Pulpectomy
  • Doesn’t really exist
  • Active Decay
  • Elicited or spontaneous pain
  • Absence of soft tissue findings
  • Absence of radiographic findings
  • Absence of mobility
  • Uncontrollably hemorrhagic pulp

Primary Tooth Pulp Therapy

• Partial Pulpectomy
  • Access same as pulpotomy
  • Remove pulp tissue in canals
  • Achieve hemostasis
  • Formocresol for five minutes (NO MORE!!)
  • Ferric Sulfate alternative/hemostatic agent
  • ZOE/Vitapex ONLY!
  • Full coverage restoration

Primary Tooth Pulp Therapy

• Pulpectomy
  • Necrotic pulp
  • Key, space maintaining tooth
  • +/- soft tissue findings
  • +/- radiographic findings
  • No potential damage to forming tooth
  • +/- pain

Primary Tooth Pulp Therapy

• Pulpectomy
  • Access same as pulpotomy
  • Remove ALL pulp tissue in canals
  • Irrigate with peroxide/bleach
  • Achieve dry canals
  • Obtrurate with ZOE/Vitapex GI
  • Full coverage restoration
Restoring the Pulp Treated Tooth

And finally, if you can’t get a crown to fit...

• Turn the belling pliers backwards and reverse bell!

Primary Tooth Pulp Therapy

• Extraction
  • critical: may require space maintenance
  • noncritical: optional cosmesis
Space Maintenance

- Unilateral
  - Band and loop
  - Gerber (SML)
  - One armed Band
- Bilateral
  - Mandibular
    - LUX
  - Maxillary
    - TPA
    - Nance

Alternatives to Restorative Care

- Parent wishes
- Exfoliation within 6-9 mo
  - Tooth is asymptomatic
  - Child is comfortable
  - No risk to surrounding teeth
  - Oral hygiene is maintained
  - Finances
- Palliative care
- Orthodontic treatment
  - Future planning for space management

The Ten Killer Questions

- “Will my child need braces?”
- Or: “Won’t it cost a fortune?”
- Or: “What’s this two phase garbage anyway?”

The Answers

- Cannot predict from primary teeth
- No correlation between 1 & 2 teeth
- May evaluate skeletal patterns of parents and child
- AAO recommends screening at age 7 or as primary teeth are lost
- Old theory:
  - Two phase treatment may lead to more stability
  - Impact bone growth
  - Fewer peri problems
- Even orthodontists don’t agree
  - AAO, 1999
  - JADA, 2010

Orthodontics in the Primary and Early Mixed Dentitions

- Controversial based on recent longitudinal studies
  - JADA, 2010
- Two phase therapy appropriate for
  - Extremes of crowding or spacing
  - Skeletal problems
  - Buccal crossbites with facial asymmetry
  - Anterior crossbites with normal skeletal pattern
  - Space loss due to caries or early tooth loss
  - Ectopic eruption
Orthodontics in the Primary and Early Mixed Dentitions

• Two phase therapy has not shown:
  • An increase in stability
  • Additional arch width

• Two phase therapy has shown:
  • Decreased peri problems
  • Increased caries
  • Burnout
  • Increased costs

All Bone is not the Same!

• Skeletal or basal bone
  • Intramembraneous or Endochondral
  • Thick cortical plate
  • Vascular with marrow spaces
  • Unyielding

• Alveolar bone
  • Develops embryologically with cement
  • Exists only for the teeth
  • Porous
  • Allows orthodontic movement

Extremes of Crowding or Spacing

Skeletal Problems

• Cl II Skeletal or Cl III Skeletal
• Impinging Bite

Buccal Crossbite with Facial Assymetry

• Check midline
• Treat with RPE
  • Fixed v. removable
• Check and correct cause
  • Habits
  • Airway problems
    • Evaluate oral v. nasal breathing
    • Look for the triad
• Without facial assymetry may delay treatment until permanent molars erupt and reevaluate

Anterior Crossbite with Normal Skeletal Pattern

• Ectopic eruption of maxillary central because of
  • Delayed exfoliation of primary tooth
  • Mesiodens
  • Habits
Anterior Crossbite with Normal Skeletal Pattern

- Treatment
  - Tongue blade
  - Toothbrush
  - Hawley retainer with occlusal coverage to open bite

Ectopic Eruption

- Distalize permanent molar
- Depends on how much damage
- Amount of crowding
- Plan for future ortho care
- Spontaneous correction in 50+%
- Which ones???
- Appliance therapy
  - Brass ligature
  - Furlerman Appliance
  - Spring bonded to button
  - Simple ortho separators

Space Loss

- Distalize to regain space

Bonus Question

- “Shouldn’t you just take out those extra baby teeth?”
- or: my child looks like a shark

The Answers

- Though it may appear necessary and may look uncomfortable, it is not necessary
- The teeth will exfoliate
- During normal swallowing the tongue pushes the teeth forwards
- Does not mean the child is predisposed to crowding
- Always a caveat!
  - Maxillary anterior teeth erupting into crosbite
  - Maxillary anterior teeth erupting into unattached gingiva

Tips to Make It Through a Day

- Always give options but...
  - Never ask a question to which no is the unintended answer
  - If a situation escalates to the point where you are getting uncomfortable
  - Walk away for a few moments
  - Always go home feeling good about what you’ve done and whom you’ve treated
Thank You for Listening

• Any questions?