Updates and Tips in Pediatric Dentistry

Jane Soxman
Welcome to the Greater New York Dental Meeting

COURSE REGISTRATION
Pre-registration is required for all continuing education courses with the exception of the “Live” Dentistry and Affiliated Groups. Your seat will be held for 15 minutes after the start of the course; after that, those without tickets will be seated according to space availability. When the room is filled, no additional people will be admitted due to fire department regulations. If you have not pre-registered, please be prepared to select an alternate session to attend.

Tickets
Tickets are required for all courses excluding Live Dentistry. Tickets for all functions can be purchased at all general registration booths located in the Registration Area on the Upper Level in the Crystal Palace and online.

6 Days of Education Seminars, Hands-on Workshops & Essays
Friday - Wednesday

4 Days of Exhibits
Sunday - Wednesday

FREE “Live” Dentistry
Hi-Tech 450 Seat Arena

SUNDAY
9:45 - 11:45
VOCO America, Inc.
Drs. Ron Kaminer & Marc Geissberger
Restorative

12:00 Noon - 4:30 P.M.
PHILIPS Sonicare
Dr. Gerard Kugel
Whitening

3:30 - 5:15
3Shape
Dr. Sundeep Rawal
Digital

MONDAY
1:30 - 2:45
First Fit
Drs. Frederick E. Solomon
Cyrus Tahmasebi
Digital

3:30 - 5:15
Align I Invisalign I Itero
Drs. Karla Soto & Christian Coachman
Restorative

TUESDAY
9:45 - 12:00
Millennium
Dr. Sundil D. Thanik
Laser

2:00 - 4:15
GlideWell
Dr. Justin Chi
Digital

9:45 - 12:00
Apa / CareCredit
Drs. Michael Apa
Aesthetic

WEDNESDAY
2:00 - 4:15
Benco / Vatech
Dr. Aeklavya Panjali
Implant

Celebrity Luncheon Speaker
John Quiñones
Monday, December 2nd
12:00 - 2:00 - Ticket 4010
$125.00

3D Printing & Digital Dentistry Conference
Dental Laboratory
Technicians Programs
Sleep Apnea Symposium
Oral Cancer Symposium

5th Annual Global Orthodontic Conference
3rd Annual Pediatric Dentistry Summit
12th Annual INVISALIGN® - GNYDM EXPO
4 Days of Programming:
Sunday - Wednesday

Botox and Facial Fillers
Seminar & Workshop

Over 1,700 Exhibit Booths
Evidence-Based Treatment & Clinical Experience

“The AAPD has stated that the clinical practice of pediatric dentistry has to be driven by science and evidence-based dentistry (EBD). However, our specialty must recognize the need for both EBD and age proven clinical experience.”


Conventional vs Biologic Treatment

Asymptomatic primary molars with lesions extending into dentin.

Conventional approach - Complete caries removal w. pulp therapy when indicated.

Biologic approach - Indirect pulp cap (Interim Therapeutic Restoration) or Hall technique.

Both approaches excellent results.


Non-Invasive Treatment

The body of evidence is growing with recommendation for non-invasive treatment such as chemical treatment or Hall technique.


Chemomechanical - CMCR

Tissue specific action with ability to discern between infected and affected dentin

Good antimicrobial activity

Non-irritating to pulp

No discoloration to tooth structure

No interference with properties of restorative materials

Long shelf-life


Carisolv gel and Papacarie gel

Rubber dam required

Gel applied, rinsed away, reapplied until gel no longer cloudy

Papacarie removed more bacteria and less expensive than Carisolv

Carisolv gel with hand instruments was compared to restoration with rotary bur.

MTA applied with depth of 2mm and restored with composite.


Hall Technique

Preformed stainless steel crowns placed without local anesthesia, caries removal or tooth preparation. (Out of UK-48% using in Scotland-success rates up to 5 years).


Caries extended into dentin & no clinical or radiographic evidence of pulp pathology.

Food residues removed and crowns cemented with glass ionomer cement.

Hall technique was more cost effective and more successful than conventional restorations in primary molars.


Open bite results due to no occlusal reduction.

Occlusion adjusts to normal occluso-vertical dimension in 15-30 days.

May use orthodontic separators for a few days before procedure to open interproximals.

Crown filled with glass ionomer cement.

Finger pressure to seat and then child’s own biting force.


Hall Technique with SDF

Lesion progression and bacterial toxins could produce a pulpitis.

SDF application would kill the bacteria and deactivate the remaining nutrients.


Hall stainless steel crowns (SSC’s) showed similar success rates to conventionally placed SSC’s.


Both had success rates of 95%.


ITR
Interim Therapeutic Restoration


“"The atraumatic restorative technique can be considered an effective approach to treating early childhood caries in young children."


W.H.O.

Alternative/Atraumatic Restorative Technique (ART)

For restoration or prevention in populations who have little access to dental care or settings where traditional care can not be performed.

Stainless steel crowns placed using the Hall technique vs conventional showed greater marginal leakage--buccal margin most.

Resin cement showed least microleakage, followed by glass ionomer and polycarboxylate cement.

Interim Therapeutic Restoration

When traditional cavity preparation and restoration can not be performed due to behavior, young age or special needs.

Can buy some time if definitive treatment is not able to be performed or must await availability of anesthesiologist for office procedure or operating room time.

No history of unprovoked/spontaneous pain.

Performed without a rubber dam & without local anesthesia.

Provides higher long-term success prior to or avoidance of vital pulpotomy treatment.

95-97% survival after one year.

Study compared microbial counts with total or partial removal of carious dentin in order to avoid pulpotomy treatment.

No difference in microbial counts under restoration after 3-6 months with or without complete removal of carious dentin.

Glass ionomer caries control (GICC). Glass ionomer is the material of choice for restoration.

Takes less than 5 minutes and can be performed at the initial visit for a child with one or more open, asymptomatic carious lesions confined to dentin.

The use of glass ionomer to restore interproximal caries in primary molars is a treatment option. Cement an orthodontic or space maintainer band to hold GI for 2-surface.

Teeth were followed for 2-3 years.

There was no statistically significant difference between GIC and composite.


Cotton pellet soaked with 1% chlorhexidine applied for one minute, air dried & glass ionomer placed in prep.

Cavity disinfection with chlorhexidine reduced microbial counts beneath the restoration.

Non-painful superficial decay is removed with a spoon excavator or slow speed with a #4 or #6 round bur.

SmartBurs SS WHITE- removes decayed dentin only. Access opening must be present or would have to be created with carbide bur.

Glass ionomer is the preferred restorative material. Resin modified glass ionomer also recommended due to longer setting (working) time & more esthetic.

Glass ionomer is left in place until child can cooperate for final restoration or sedation/operating room is scheduled.

The bacterial counts significantly decrease within the carious lesion.

The dentin will remineralize and pulpotomy may be avoided.

Code D2941 Interim Therapeu5c Restoration - primary dentition -”Placement of an adhesive restorative material following caries debridement by hand or other method for the management of early childhood caries. Not considered a definitive restoration.”

Glass Ionomer
Capsules with rechargeable fluoride release.

Mix/triturate according to manufacturer’s instructions and place immediately in prep .

Working time varies with material, but usually about 1 minute 15 seconds from start of mixing.

Finish (if you dare) after material’s set time.

Capsule Applier/Capsule Extruder

Glass Ionomer
Fluoride releasing
Coefficient of thermal expansion like tooth structure
Chemically adheres to tooth structure
Sets through acid-base reaction
Bonds to composite resin
Low compressive and flexural strength- poor wear

Resin-Modified Glass Ionomer
Addition of the resin component with glass ionomer decreases initial hardening time and handling.

Significantly increases wear resistance and physical strengths of the cement.

Resin-modified improves physical properties
Resins improve flexural strength and reduce solubility
Light cure

Resin-Modified Glass Ionomers properly set with two different mechanisms.

RMGI acid-base reaction and visible light polymerization reaction compete and inhibit one another during setting.

Findings recommend that some of the self-curing GI reactions should be permitted to occur for many seconds prior to light curing in order to enhance the unique benefits of the RMGI.


New lesions at the margins of composite restorations are the predominant cause for failure and replacement of restorations in primary teeth.

S. Mutans has esterase activity at levels that degrade resin-based restorative materials, contributing to secondary caries.

There is a moderate strength of evidence that glass ionomer cements may reduce the incidence of recurrent caries in the margins of occlusoproximal restorations in primary teeth.

Composites do not have the ability to increase the local pH, which leads to increased levels of the acidogenic bacteria and higher cariogenicity of the biofilm.


Recurrent caries occur more often with composite than with amalgam.

Biodegradation occurs in time due to uptake of water and breakdown by salivary enzymes and acid from bacteria. (DieCal)

Mechanical degradation occurs with thermal stress and occlusal forces.

Biofilm, number of restored surfaces, and pulp therapy affect the survival of composite resin restorations in early childhood caries.

34.8% of restorations survived at 30 months.

GAP FORMATION


Restoration with SSC provides longer success than composite restoration in mandibular fist primary molars.

Survival rates were > 90% over 5 years.


Preparation should not extend beyond the proximal line angles.

Exception for primary molar that is expected to exfoliate within 2 years.


ADA standards for full acceptance of a restorative material are 3 years of longevity for primary dentition.

There is a potential for significant increase in intrapulpal temperature when light curing a composite in a moderately deep preparation in primary molars.

Occlusal preparations 1.5mm in depth with 1mm of pulpal floor thickness.


Silver Diamine Fluoride

Became available August 2015
Marketed as Advantage Arrest by Elevate Oral Care LLC


Non-invasive procedure w/o local anesthesia for asymptomatic caries. “Buy Time”

Can be applied anywhere.

Simplicity of tx - Applied w. micro sponge.

Low cost (similar to fluoride varnish).

Evidence-based arrest of caries progression.

Both fluoride and silver ions contribute to mechanism of action as antimicrobials.

Hydroxyapatite is transformed to Fluoroapatite, which is less soluble in an acid environment.

Silver ions act on the bacterial cell wall and inhibit DNA replication, killing bacteria.

Carious dentin is stained black.


D1354 Interim Caries Arresting Medicament Application. About 160 drops per 8ml vial. Unit dose available. Shelf life is 3 years.
“When bacteria killed by silver ions are added to living bacteria, the silver is re-activated so that effectively the dead bacteria kill the living bacteria in a “zombie effect”.”

This aids in explaining how the silver deposited on the bacteria and dentin proteins within the lesion provides sustained antimicrobial effects.

Apply one to two times per year until tooth exfoliates.


Ag(NH3)2F - pH 10 Ammonia stabilizes the Fl

Silver allergy is contraindication.

Relative contraindications are mucositis or any inflammation that disrupts the protective barrier provided by stratified squamous epithelium. Would cause increased absorption and discomfort with contact.

Safety margin dose is 0.95mg/kg.

Recommendation is one drop per 10kg per treatment visit.

Smallest child with caries may be about 10kg.
Average weight for 1-year old(22pds girl & 23 boy)

One drop is 9.5mg Ag & treats 5 teeth.

Weekly intervals at most.


When dentin is dried, the SDF penetrates the porous body of the lesion. The drier the lesion, the more penetration of the silver.

For example, think of a crack in cement that would be filled with cement, the liquid penetrates the dentinal tubules with a capillary-like action. Silver precipitates in the tubules and plugs.

After initial application, do second application in a week or two to check hardness.

Hardness of dentin shows lesion arrested. Silver is essential for the hardening of the lesion.


*Clean & dry with compressed air.

Microsponge (2 sizes) to apply or microfiber brush, rubbing for one minute. Do not dry with compressed air after application.

Dry 1-2 minutes. No light cure! Immediate discoloration.

Do not permit saliva to touch.

Application twice per year is most effective.

Application time between 31.2 & 83.5 seconds.

No association found between application time and caries arrest.

Patients checked at 3 weeks to determine need for reapplication. Efficacy evaluated by dentin color, texture and presence of any pain.

Most parents agreed or strongly agreed that is an easy, painless procedure and not concerned with dark color of teeth.

Clear liquid stains skin, clothes & all surfaces.
Wipe face/lips w. 2X2 dipped in salt water
Mr. Clean Magic Easer with pumice and water for countertops

Skin exfoliates within 2 weeks. Stain must be drilled out of tooth.

Color change of dentin occurs over one week.

Anyone licensed to place topical fluoride can apply.

SDF “bleeds” and can discolor “pre-clinical” white spot lesions. This stain can polished off with a finishing bur.

Failures d/t:

- Food impaction with large occlusal lesions (ITR)
- High cariogenic diet
- Low fluoride exposure
- Poor oral hygiene

Concerns are: Lack of follow-up, SDF does not restore form and function and how long duration of caries arrest.

Written consent, which includes colored photographs of teeth post-application, should be obtained.

When applied twice annually, most effective in primary incisors and buccal/lingual smooth surfaces.


Stain on primary molars more acceptable than incisors, but parents preferred stain to sedation/general anesthesia.


Twice the fluoride as fluoride varnish - 44,800 ppm vs 22,600 ppm

Preventive effects greater with one application of SDF than 2-4 times with fluoride varnish or chlorhexidine varnish.

10%-38% formulations

38% SDF more effective treatment for caries arrest. 44,800 ppm Fluoride

When applied twice per year provides 80% reduction in caries progression and new lesions, which is twice that of fluoride varnish.


Combine with Fl varnish at 3 mo. intervals for high CRA.

Pretreating dentin with SDF does not impede the bonding strength of composite resin to dentin.

Esthetic concern d/t composite will be dark.


SDF releases silver ions which inhibit growth of S mutans and reduce metabolic activity of plaque.

SDF does not interfere with the bond strength between glass ionomer cement and carious primary dentin.

When the child can co-operate, final restorations can be performed.


If light cure SDF in a dappen dish, entire dose will oxidize and become inactive.

If apply SDF to carious lesion, it immediately binds to the proteins in the lesion. After 60 seconds, most protein surfaces have bound with the silver and there is residual excess silver still in solution.

Light curing at this time will cause the residual silver to oxidize, rendering it useless and black in color.

The silver that bound prior to light cure will remain bound and effective.

INDICATIONS/PROCEDURE
Silver diamine fluoride (SDF) is an antibiotic liquid. SDF is used on cavities to help stop tooth decay. SDF may need to be applied every 6-12 months and follow-up is necessary 2 weeks after application. In some cases, fluoride varnish may be alternated with SDF application every three months. Monitoring is essential and your child must be seen every three months to evaluate efficacy of the SDF.

The tooth or teeth to be treated are dried and cotton rolls and/or gauze are used to isolate the tooth or teeth. SDF is applied for one minute and dried. The tooth or teeth are then rinsed with water.

SDF does not eliminate the need for fillings or crowns. Form and function are not restored. Once behavior permits, if additional procedures can be performed, a fee for that treatment will be incurred.

ALTERNATIVES
No treatment, but decay will likely progress resulting in pain or abscess requiring an extraction. Restoration with tooth-colored fillings or crowns if behavior permits. Referral for sedation for definitive treatment.

I have read the indications/procedure, contraindications, risks and alternatives to treatment. I have seen a photograph of stained teeth treated with SDF. All questions have been answered to my satisfaction.

I UNDERSTAND THE TREATED TEETH WILL BE PERMANENTLY STAINED BLACK.
I UNDERSTAND THAT SDF DOES NOT RESTORE THE TOOTH (TEETH) BUT SLOWS THE DECAY PROCESS AND THAT DECAY CAN STILL PROGRESS, ESPECIALLY IN CAVITATED AREAS (TEETH WITH HOLES IN THE CHEWING SURFACE).
SMART

Silver Modified Atraumatic Restorative Technique

SDF and Conventional Glass Ionomer Cement

- SDF applied
- High viscosity glass ionomer placed
- Light cure same day causes gray discoloration due to reacting with free silver ions. The light precipitates the silver out of solution.
- Reappoioning in 2-3 weeks to place the GI will avoid the discoloration.

High viscosity glass ionomer cement (HVGIC) - more biocompatible than resin composite
- less shrinkage stress
- bonds with both chemical and micro-mechanical adhesion
- release of fluoride and ability to recharge which reduces levels of biofilm pathogens and consequently recurrent caries

Indirect Pulp Therapy - IPT

- Caries less than 1mm away from the pulp.
- Covered with a biocompatible material.
- Calcium hydroxide has been material of choice in the past due to alkaline biocompatible properties and induction of reparative dentin.
- Resin-modified glass ionomer has comparable success to calcium hydroxide but is better at preventing microleakage.

- 20% poly acrylic acid applied for 10 seconds to remove the smear layer, rinsed & lightly dried
- not interchangeable with 37% phosphoric acid
- application of a resin bonding agent would block ion exchange of the GI and impede cross linking of the GI to tooth structure

- Caries closest to the pulp is left in place.
- Infected dentin is removed.
- Affected dentin, which has the potential to remineralize remains.
Less painful since no pulpal entry.

Significantly greater survival rate after 3 years compared to formocresol or ferric sulfate pulpotomy.


Deep caries with selective caries removal & well-sealed restoration
Rubber dam isolation & stainless steel crown
Pulpotomy with ferric sulfate vs selective caries removal
At 48 months, 98% success rate with IPT vs 70% success rate with ferric sulfate.
17% treated with ferric sulfate exfoliated early


Indications for IPT

No symptoms of pulpitis and PA does not show carious involvement of pulp chamber.

Instead of creating a pulp exposure, requiring endodontic treatment with complete excavation of caries, the deepest decay is left in place.

Indirect Pulp Therapy for Young Permanent Molars


Some state that by continuing excavation into the pulp, infected dentin chips are displaced into the pulp, thus increasing the risk of pulpal inflammation.

After exposure due to caries, the pulp’s repair capacity is questionable.

Young permanent molars/ hypoplastic molars.

IPT for Young Permanent Molars

Allows completion of root maturation prior to endodontic treatment.

Persistent long-term follow-up is required with PA every 6 months.

One-step now recommended over stepwise.
Partial caries removal with amalgam or composite restoration had 99% success rate with a single session vs 86% success rate with step-wise excavation.

Single session is better for behavior considerations, cost and follow-up.


Tooth treated on first appointment.

No plan to re-enter tooth for pulpotomy.

Large round bur w. slow speed preferable to spoon for caries excavation.

May leave 1-2mm of leathery dentin over pulp.

Affected dentin should be able to remineralize due to decreased number of micro-organisms.

Some Indirect Capping Agents
Glass ionomer
Calcium hydroxide- Dycal, UltraCal XS
Bio-Cap -Resin-ionomer adhesive liner with fluoride
Geristore
MTA
TheraCal LC
Biodentine
NeoMTA & NeoMTA Plus

To Stimulate Healing and Repair

Coefficient of thermal expansion similar to tooth structure.

Fluoride-releasing and anti-microbial properties---restoration of choice when cariogenic properties are important.

Ionic bond with tooth surface that is consistent throughout the life of the restoration.

Glass Ionomers: Material of Choice

Simple placement.

Minimizes possibility of post-operative sensitivity in deep restorations.

Layering not necessary with GI due to no polymerization shrinkage.

In large restorations with thin outer walls, the polymerization shrinkage with composite can cause fracture of cusps.

Resin Modified Glass Ionomer

Must be 70-80% glass ionomer in order to be called a resin modified glass ionomer.

20% polyacrylic acid- Increases the bond by conditioning collagen and dentin.

RMG bonds chemically to tooth structure.
Calcium hydroxide is very soluble and not a good choice adjacent to resin, which has hydroscopic properties that make water available within the restoration. (CaOH interferes with composite set - Robert Lowe DDS)

Glass ionomer cement (GIC) is a good base or liner with resin-based composite.


Placement of a adhesively bonded resin-based composite over a resin-modified glass ionomer dentin replacement layer almost guarantees no post-operative sensitivity for the young patient.


A well-sealed restoration is critical for the success of IPT.


Lamination
Sandwich Technique
Stratification

Combination of glass ionomer for dentin replacement and bonded resin-based composite enamel replacement.


GIC or resin-modified GIC photochemically bonds to the dentin. The need for dentin bonding adhesive is eliminated with GIC.

Bonding agent for the composite is placed over the GI or RMGI.


Criteria for Success

Vitality is preserved.

No pain, sensitivity or swelling.

No radiographic evidence of internal or external resorption or other pathologic changes.

Continued apexogenesis.

Obtain PA every 6 months (if possible!).
Incipient Interproximal Caries

Bridges the gap between non-operative and operative tx choices.

Postpones the first restoration placement.


Inner half of enamel or outer third of dentin.

The lesion body is soaked with the resin infiltrant and hardened with blue light, sealing the lesion.

Difference is that the diffusion barrier is created inside the lesion and not on the surface.


After a 3-year follow-up, progression of interproximal caries was reduced.

Operator adherence to protocol

Cost


Extraction of Primary Dentition

Serrated Split Beak Forceps & Capture Forceps
In this Happy Tooth Chest you will find a teeny, tiny tooth of mine. And while I lay where dreams are made, maybe we can make a trade.

The number one reason children give for fear of going to the dentist is the fear of the injection.


Combative Behavior and/or Avoidance Behavior

Topical Anesthesia
Temporary loss of sensation 2-3mm in depth.
Contact for minimal duration of 2 minutes.
No direct proportional relationship between duration of contact and clinical effectiveness.
Decreases discomfort for needle penetration & rubber dam clamp placement.


Vibration
Vibration stimulus is counter-stimulation that reaches the brain before pain sensation.
Attributed to gate control theory.
Stimulation of the larger diameter A beta fibers can close a neural “gate” to nociceptive signals, reducing pain perception.
Pain relief enhanced by simultaneous activation of nerve fibers that conduct non-noxious stimuli.

Vibration stimulus has been shown to significantly reduce pain with injection compared to use of topical anesthesia alone.


DentalVibe significantly reduced injection discomfort in patients 10-17 years of age.


DentalVibe significantly reduced injection pain in 6-12 year-old children.


Bone is very porous with rapid uptake.

Inject slowly

Buccal infiltration usually adequate in mandible rather than block under age 8

Locating the Mandibular Foramen
In younger patients the mandibular foramen is located below the occlusal plane and in older patients, above.

Panoramic Films &Models Analyzed
1.26mm below occlusal plane in full primary dentition.

0.33mm above the occlusal plane as first permanent molar erupts.

1.54mm above occlusal plane when first permanent molar fully erupted.

1.64mm above occlusal plane as permanent lateral incisors erupt.

1.98mm above occlusal plane as permanent second molar erupts.

2.9mm above occlusal plane when permanent second molar fully erupted.

Place thumb extra-orally on posterior border of ramus and index finger in the coronoid notch, the deepest depression -concave area- on the anterior border of the ramus.

Barrel of syringe on opposite corner of mouth.

Short 27 gauge needle for young pediatric patient. Usually do not need block under age 8.

Mandibular foramen lies 1/2 to 2/3 of the total width of the width of the ramus measured from the anterior border.


5-7 year old children receiving IAN.

Distraction with audiovisual glasses was an effective means to reduce pain with injection of local anesthesia.

Prolonged numbness with 4% Septocaine from 3 to 5 hours.
Primarily in children younger than 7 years of age.
Lip most common site for accidental injury.
Not related to injection site.
Inform parents - Include with Consent.


Long face syndrome/adenoid facies
Increased overjet
Open bite
Maxillary constriction often with crossbite
High vaulted palate
Habitual anterior tongue position
Snoring
Mouth breathing/open mouth posture

Upper Airway Obstruction

Obstructive Sleep Apnea - OSA

“Prolonged partial or complete airway obstruction during sleep.”

Increased intrathoracic pressure during inspiration may result in sleep disruption.


Obesity increases the incidence of obstructive sleep apnea in children between 2 and 18 years of age.


Most common feature of obstructive sleep apnea hypopnea syndrome (OSAHS) is snoring.

OSAHS children demonstrated hypoxemia, lower oxygen saturation, shorter stature, lower weight, elevated LDL cholesterol, higher systolic BP, lower IQ test performance, and attention deficit.


OSA is now recognized as highly heterogeneous and includes not only obese patients, but children who are failure to thrive.

Mandibular advancement splint therapy can provide significant positive response.


One of the major factors in obstructive sleep apnea in children is adenotonsillar enlargement.

The Brodsky scale measures the amount of oropharyngeal airway occupied by the tonsils.

- Grade 1: less than 33% 
- Grade 2: 34% to 66%
- Grade 3: Equal to or greater than 66%


Down Syndrome

50% of individuals with Down Syndrome experience OSA.

Perlman, SP. Health issues in patients with Down syndrome. Special Presentation Pediatric Dentistry Practical Reviews. 2015; vol. 29 no. 5
Diagnosing OSA

- Sleep video or audiotape
- Overnight pulse oximetry
- 12-15 seconds between breathes
- Neck size >17 inches
- CT Scan

Computed Tomography: CT

A CT scan provides a better evaluation of the pharyngeal airway because it shows not only transverse but also sagittal dimensions of the airway.

Ceph gives only a 2-dimensional analysis vs 3-dimensional with CT.


Clinical Practice Considerations

- Bulge on back of head
- Working in mandible- Elevate chin
- Place neck roll under shoulders to hyper-extend the neck

The rubber dam prevents aspiration, provides moisture control and protects oral structures.

However

The desaturation index, measured with pulse oximetry during sleep, is a good method to determine the presence and/or severity of OSA in children.


An open mouth narrows the oropharyngeal area, significantly reducing the volume of the upper airway patency and decreasing tidal volume.

Consideration with sedation, asthma and tonsillar hypertrophy.

Mouth-breathing children have a deeper palatal vault, larger mandibular width and larger arch-length compared with nasal-breathing children.

Adenotonsillectomy in pre-pubertal children resulted in greater transverse development in the maxillary arch.


Complications with surgical intervention reported to be as high as 34%.

There is a 20% incidence of residual or recurring OSA.

Consider intranasal steroid or other oral medications as alternative to surgery.


The most commonly used treatment modalities for obstructive sleep apnea and sleep-disordered breathing by pediatric dentists were referral to ENT for tonsillectomy and adenoidectomy (82.5%), rapid palatal expansion (67.5%), traditional dental sleep appliance (37.5%), fixed orthodontic appliances (32.5%), Herbst appliance (20%), Schwartz appliance 15% and Twin Block (10%).


Rapid maxillary expansion might aid in the quality of life for children with palatal constriction and sleep-disordered breathing.


RME not only widens airway dimensions, improving nasal airflow but also decreases upper respiratory infection and nasal allergy.

Nasal breathing, instead of mouth breathing, creates favorable change in oral microflora and development of oral structures.

Hearing thresholds significantly improved with RPE.

Skeletal gains are most successful in patients who have not peaked in pubertal growth.

CBCT shows structure of midpalatal suture.

RME can be performed up to age 15.

To increase the probability of successful expansion, girls should be treated before age 13 and boys before age 14.


Space Maintenance

Space loss usually occurs within the first six months.

Must consider dental age rather than chronologic age of the child.

Anticipate six months eruption time for each mm of bone that covers the tooth.

Permanent successor may erupt prematurely with loss of primary molar due to abscess.

Primary Incisors

Space maintainer not necessary after eruption of the primary canines except for esthetics.

Space loss may occur with interproximal caries.

In young primary dentition, full coverage with a SSC probably best choice for multiple surface restoration in a high caries risk child for longevity.

If first primary molar is lost after eruption of the first permanent molar but before eruption of the permanent lateral incisor, a space maintainer may be necessary. (6 yr-old)

If second primary molar is lost before or after the eruption of the first permanent molar, a space maintainer is necessary. (band & loop, lingual arch wire, distal shoe)


Sequence of Eruption

Mandible—After the first permanent molars are erupted, the sequence usually follows the position of the arch from the central incisors to the second premolars.

Maxilla—The canine usually erupts after the second premolar.

If the first permanent molar is fully erupted and in occlusion.

A space maintainer is usually not indicated for premature loss of a maxillary or mandibular first primary molar. (safer in mandible)

Early loss of the maxillary first primary molar may be accompanied by distal drift of the primary canine toward the extraction space and palatal migration of the maxillary incisors.

Early loss of mandibular first primary molar results in distal drift of mandibular primary canine.


Band the second primary molar.
The loop extends to the distal of the primary canine just below its contact point.
Loop is wide enough to permit unobstructed eruption of the premolar.
Remember dental age when deciding when to place the band & loop.

Band & Loop

First Primary Molar with Permanent Molar near Eruption or Erupting

Space maintainer necessary to avoid mesial drift of second primary molar into the extraction site.
Second premolar will be blocked out.

Second Primary Molar

If second primary molar is lost before or after the eruption of the first permanent molar, a space maintainer is necessary.

- band & loop
- distal shoe
- lingual arch wire

Saltzman B. Band and loop space maintainer. Univ of Toronto, CA Faculty of Dentistry Information and Instructional Technology Services

Distal Shoe

Compound impression.

Appliance can be fabricated on the model prior to extraction of the second primary molar and delivered at the time of the extraction.

Delivery at the time of extraction is the better choice.

With digital radiograph, can place a point just distal to the first primary molar and mesial to the first permanent molar. Connect points with a line and can get an exact measurement.

Traditional radiographs may not be accurate for measurement.

Send PA with pre-extraction model.

Second Primary Molar Premature Loss After Eruption of First Permanent Molar

Preferable to band the first primary molar and extend the loop distal to the first permanent molar.

Or band the first permanent molar and extend loop mesially to the distal of the first primary molar. Consider OH/hypoplasia.

When the first primary molar becomes mobile or exfoliates, the band and loop may need to be replaced with a Transpalatal/Nance (maxilla) or lingual arch wire (mandible).

Mixed dentition with loss of one or both second primary molars in the mandibular arch.

036 or .040 wire contacts the lingual of the incisors with bands on the mandibular first permanent molars.

After eruption of the mandibular incisors.

Lower Lingual Arch Wire
Transpalatal Arch Bar

.036 or .040 in wire contoured to the posterior hard palate that crosses to the palatal of the banded first permanent molars.

Omega loop applies light distal force to assist in prevention of the rotation or tipping of the permanent molars.

For use when only one second primary molar is prematurely lost.

The contralateral remaining second primary molar helps to stabilize the permanent molars.


Nance

Permanent maxillary molars are banded and an acrylic button is placed on the palatal rugae.

Monitor for soft tissue irritation.

For premature loss of one or both second primary molars.

Band and loop failure usually due to cement loss, crown and loop due to solder breakage.

Mean survival time B & L 18.8 months, C & L 40.4 months.


Parental Presence

“It is important to understand the changing emotional needs of parents because of the growth of a latent but natural sense to be protective of their children.”


Parental Presence

Under four years of age

Special needs

Same parent for each visit

Non-verbal cues from parent

Parent more comfortable with dental treatment should accompany the child
Only one parent may accompany

After a few visits, most parents do not feel the need to be present

Some parents prefer not to be present

Use both written and verbal instructions regarding parental presence

**Why Not Have Mama Bear There?**

Waste time

Disrupt the child

Make the dentist uncomfortable


Parents who are permitted to choose to be present or absent for the dental visit were

- more satisfied with the visit
- had a more positive attitude toward the dentist
- had a more positive perception of their child’s response to the visit


There was significant increase in non-fearful children’s perception of discomfort with consecutive appointments when the parent was absent.

Parents of those children also rated behavior as worse compared to parents who were present.

Overall, parental presence did not influence behavior, but may be somewhat beneficial for non-fearful children.

Starting with easier operative appointments and progressing to more difficult may not be best idea.

May warn parents that child may be “less happy” about returning with each visit.


Children ages 3-8 years of age with Frankl score of 1 or 2. (strong avoidance/combative behavior, fearful OR reluctant, uncooperative)

Study did not show any advantage or success in treatment by having parent present or absent.

Parental Background Affects Acceptance or Behavior Guidance Techniques

Parents of various ethnicities ranked behavior guidance.

Positive reinforcement and tell-show-do ranked highest in parental acceptance.

Next in ranking were distraction, parental presence/absence, nitrous oxide/oxygen inhalation, nonverbal communication and sedation.

Voice control and protective stabilization ranked lowest.

Asian parents were far less accepting of sedation compared with Caucasian and Hispanic parents.


Parents were shown videos in random order of tell-show-do TSD, voice control VC, nitrous oxide NO, oral sedation OP, general anesthesia GA and passive & active restraint PR/AR.

Significant differences between Hispanic and non-Hispanic respondents for AR, GA, & PR with Hispanic parents being less accepting of AR & GA.

Hispanic parents were more accepting of VC and PR than non-Hispanic and less accepting of NO

Non-Hispanic white and black parents did not differ significantly in acceptability ratings.


78% of all parents prefer to be present for all procedures—which has remained relatively constant over the last 20 years

More than one-third did not want the dentist to unilaterally make the decision regarding 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 rather than interrupt treatment if procedure changes.

Parents were poor to fair in reporting the level of fear and anxiety of their children in a Fear Survey Schedule, reporting higher anxiety than demonstrated by the child.

Children’s self-assessments were fair to good predictors.


Anxious parents already have an activated emotional response and attempting to suppress it may cause increased distress.

May be better to have the anxious parent present for a procedure he/she perceived to be painful. Being present may decrease an attempt to interfere with treatment.


Mommy? Ma’am? Daddy? Sir?

Parents prefer to be addressed as mom or dad.


We find that children do much better if the parent is not present for treatment.

The child’s attention is divided between dentist and parent.

The dentist’s attention is divided between child and parent.

We want to give your child our undivided attention.

We need Angel’s undivided attention, and we want to give our undivided attention to Angel. The door will be open, and you may come to check on Angel any time you wish. We shall let you know immediately if we feel the procedure would go better with your presence.

Better in the reception room

Child sees dentist/staff as in control.

Message from parent is that the parent is comfortable with the plan and that the child can do this.

Child’s attention is shifted in a less threatening environment.
“Children with secure attachments to parents tend to be comfortable exploring their world and are less likely to have SAD, while insecure children are more likely SAD candidates. Parents who teach coping skills are less likely to create children with SAD.”


If parent comes to the treatment area, cues planned ahead of time for parent’s departure.

Interaction between parent and child interfering with treatment.

Ask for another parent next time.

Mothers were less compliant than fathers or legal guardians regarding being a Silent Partner.

Dentist must reinforce this request.


“A single oral, preoperative instruction for the parents to remain a passive observer during dental visits is effective and does not alter their satisfaction level with respect to dental care.”