ASDC AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN

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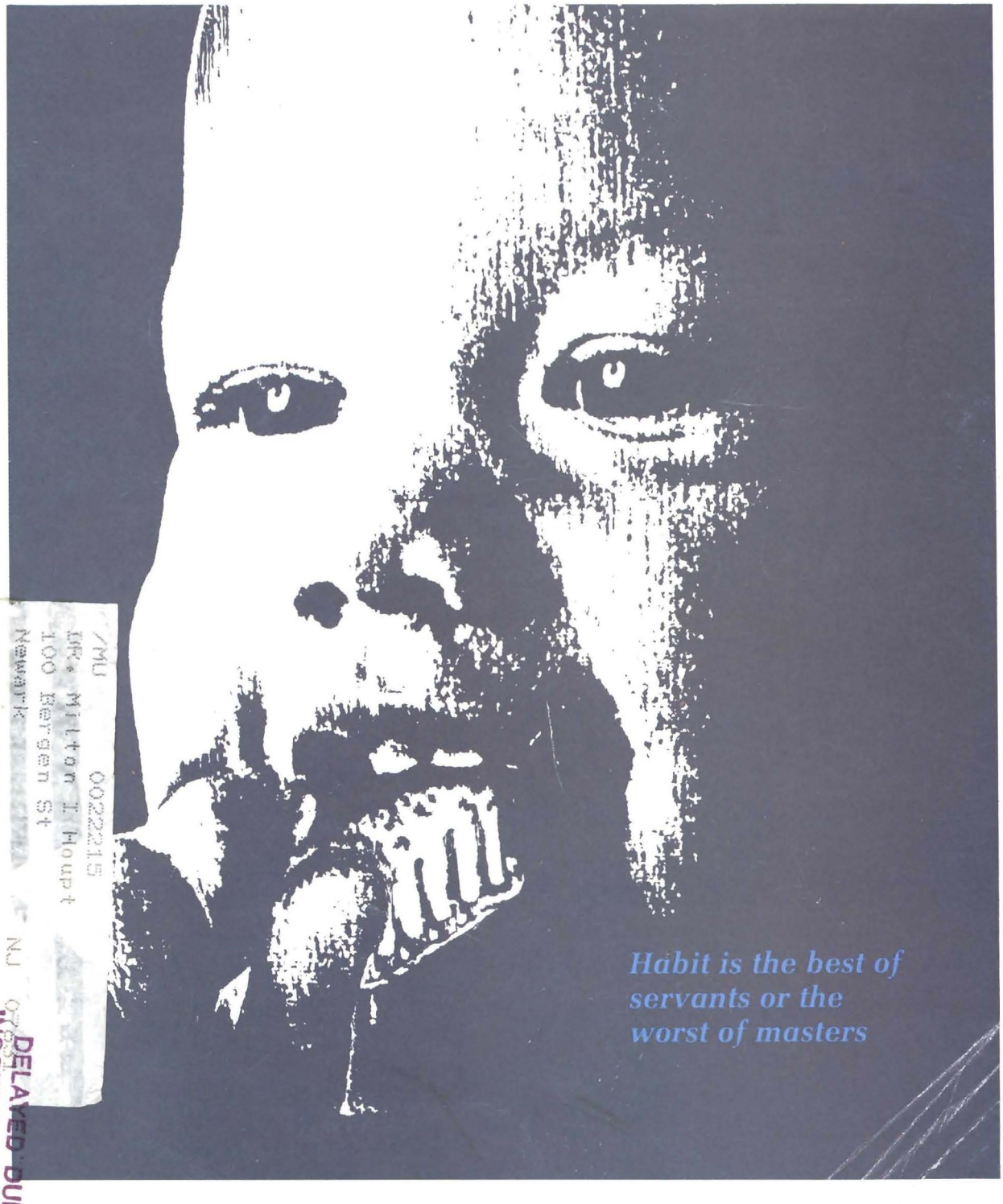

ESTABLISHING GOOD ORAL HEALTH HABITS

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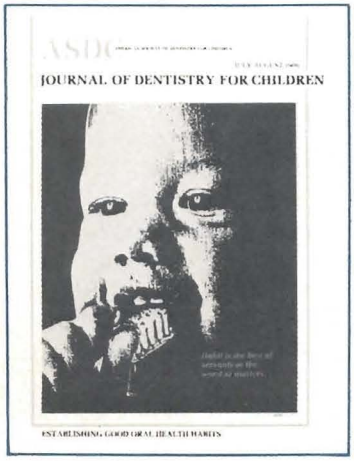

The cover depicts the introduction of good oral habits in infancy as a step in the achievement of a life, free of oral disease. Design and art by Sharlene Nowak.

ORAL HEALTH

TRAUMA

DEVELOPMENTAL ABERRATIONS

CASE REPORT

NUTRITION

For the busy reader

Infant oral health: a rationale—page 257

Several advances in our knowledge of the dental disease process and of the methods of preventing it have led to the reality of rearing children free of dental disease. This process must begin early in infancy (birth to one year old) to ensure a successful outcome.

Requests for reprints should be directed to Dr. Stephen J. Goepferd, Department of Pediatric Dentistry, S-201 Dental Science Building, University of Iowa, Iowa City, IA 52240.

Infant oral health: a protocol—page 261

Dentists have the opportunity to help infants and toddlers avoid nursing caries and to reinforce the foundation of preventive dental habits. The protocol described by the author includes increasing public awareness; giving a preappointment questionnaire; interviewing the patient's parents; examining the infant or toddler; and establishing home care routines and a recall schedule.

Requests for reprints should be directed to Dr. Stephen J. Goepferd, Department of Pediatric Dentistry, S-201 Dental Science Building, University of Iowa, Iowa City, IA 52240.

Are the unmet needs of children overshadowed by our concern for the aged?—page 267

During the last twenty-five years, the economic status of the aged has improved substantially. Far less improvement and attention has been directed to the need for—and use of—health and social services by children, both poor and nonpoor alike. Dental care is one of the categories of services that balanced more favorably to include all age groups.

Requests for reprints should be directed to Dr. H. Barry Waldman, Department of Dental Health, School of Dental Medicine, State University of New York at Stony Brook, Stony Brook, NY 11794-8715.

Root resorption: a complication following traumatic avulsion—page 271

The viability of the periodontal ligament depends on the extraoral period; this viability decreases as the extraoral period of traumatically avulsed teeth increases. This case report describes the management of avulsed teeth replanted four hours after the initial trauma. Progressive root resorption was a problem.

Requests for reprints should be directed to Dr. Anne L. Symons, Department of Social and Preventive Dentistry, Dental School Turbot Street, Brisbane Q.4000, Australia.

Eruption of tooth-like structure following the exfoliation of natal tooth: report of case—page 275

Natal teeth, defined as those that are in the mouth at birth, are rare: one case in 2,000 to 3,500 births. In this case, that of a nine-month-old Japanese boy, it is reasonable to infer that the tooth-like structure, described as a hard-tissue conglomerate with a bone-like appearance, originated in the remnant of the dental papilla and Hertwig's sheath of the natal tooth. Both dentin and root formation were thereby induced.

Requests for reprints should be directed to Dr. Takashi Ooshima, Department of Pedodontics, Osaka University, Faculty of Dentistry, 1-8, Yamada-Oka, Suita, Osaka 565, Japan.

Ectopic developing permanent teeth in a five-year-old: report of case—page 279

The nomenclature and nature of various dental anomalies are discussed in this case report to determine the etiology. The tooth in question appeared to be a normally developing eumorphic premolar, and a conservative treatment plan was presented.

Requests for reprints should be directed to Dr. Duane

R. Tinkler, Director of Dental Services, Children and Youth Project, University of Texas Health Science Center at Dallas, 6263 Harry Hines Blvd., Suite 401, Dallas, TX 75235.

Multiple agenesis in two siblings: report of case—page 281

In this family, two of the four siblings were affected with multiple agenesis and with very similar dentitions. Both had eleven permanent teeth missing. Preventive and early restorative treatments can be provided as necessary.

Requests for reprints should be directed to Dr. Eric Fiszon, 8 Place du Roi George, 57000 Metz, France.

Angiography, gingival hyperplasia, and Sturge-Weber syndrome: report of case—page 283

This syndrome, also known as encephalotrigeminal angiomatosis, is a condition with multiple clinical findings, including vascular anomalies and intraoral involvement. The patient was a nine-year-old black boy with Sturge-Weber syndrome. He had a lesion removed and diagnosed as pyogenic granuloma. There were no complications and the tissue healed normally.

Requests for reprints should be directed to Dr. Stephen Wilson, College of Dentistry, Ohio State University, Postel Hall, Room 3001 E, 305 West 12th Avenue, Columbus, OH 43210.

Hallermann-Streiff syndrome: report of case—page 287

This syndrome, known also as oculomandibulocephaly, is a symmetric second branchial arch defect resulting in dyscephaly with bird facies and hypoplastic mandibles, among other defects; nearly half of all affected persons show dental anomalies. It should be considered a congenital disorder consisting mainly of developmental anomalies of the skull and facial bones.

Requests for reprints should be directed to Dr. Arnold J. Malerman, Suite 1, Dresher Professional Center, 830 Twining Road, Dresher, PA 19025.

Dental management of a child with familial dysautonomia—page 293

Familial dysautonomia is a hereditary sensory neuropathy that involves sensory, motor, and central components of the nervous system. Orofacial features include a tendency toward facial concavity in the child, and convexity in the adult. There is increased salivation, and crowded teeth and malocclusion are characteristic. This patient is not Jewish; this makes his case an extremely rare one.

Requests for reprints should be directed to Dr. Burton L. Nussbaum, One South Forge Lane, Cherry Hill, NJ 08002.

Food allergies and other food sensitivities—page 296

Some people experience individual adverse reactions to foods that most other people can eat with no ill effects. These food sensitivities include true food allergy, involving the body's immune system, and various types of nonallergic food sensitivities.

No reprints available.

Stone Age nutrition: implications for today—page 300

The nutritional elements appropriate for contemporary humans reflect genetically determined biochemical and physiological factors, which have evolved over hundreds of millions of years. Stone Age humans, however, derived nearly all of their nutrients from just two of the four major food groups we select from today.

Reprints are not available.

Infant oral health: a rationale

Stephen J. Goepferd, DDS, MS

The total prevention of dental disease in children is the ultimate dream of dentists who are dedicated to the care of the oral health of children. Several advances in our knowledge of the dental disease process and of the methods of preventing dental disease have led to the reality of rearing children free of dental disease. Although this potential exists, the preventive process must begin early in infancy (birth to one year of age), to ensure a successful outcome. The purpose of this paper is to present the rationale for the initiation of a preventive dental program during infancy.

NURSING CARIES

Nursing caries, also referred to as "baby bottle mouth" or "baby bottle decay" is a very destructive carious process, which can affect infants and toddlers. This pattern of dental decay has been observed in children as young as twelve months of age.[1] It is associated with the improper use of the bottle, such as putting the infant to bed with the bottle at night or at naptime; or allowing the child to use a bottle containing solutions other than water during the day as a pacifier. "Nursing caries" has also been associated with inappropriate breast-feeding patterns such as frequent and prolonged feedings, once teeth have erupted.[2,3] If this particular dental disease process is to be prevented, parents must be educated

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regarding proper infant feeding methods and the hazards associated with improper feeding patterns.

DENTAL CARIES IN TODDLERS

The dental profession must recognize that any dental caries detected in toddlers (three to four years of age, the traditional age recommended for the first dental visit) began much earlier. The efforts to prevent dental disease in these children, therefore, must logically begin prior to the onset of the disease, namely during infancy.

With the current advances in understanding the dietary influences on dental disease, the knowledge that basic habits such as dietary likes and dislikes, eating patterns, and tooth cleaning behaviors are established early in life becomes instrumental in supporting early intervention by means of preventive education of parents to avoid dental disease in children.[4-7] When children are maintained on the bottle past twelve months of age, they become increasingly dependent on the bottle as a relaxation habit rather than as a basic feeding mechanism. This increases the probability that the bottle will be used to pacify at times other than regular feeding times, such as bedtime, naptime and during the day.

Any solution other than water usually contains a sufficient amount of a sugar so that acid production by the plaque causes a lowering of the oral pH, which resembles the pH that follows the ingestion of a sucrose solution. Acid production not only occurs each time the bottle is in the mouth, but also for as long as the bottle remains in the mouth; as well as for a period of time after the bottle is removed. Parents should be made aware of this information before their children reach three years of age.

DENTAL CARIES: AN INFECTIOUS DISEASE

There is an increasing amount of evidence to suggest that dental caries is an infectious disease process initiated via the transmission of *Streptococcus mutans* from parents to their infants. The specific plaque hypothesis (SPH) suggests microbial specificity in dental caries and longitudinal studies have provided evidence to support the role of *S. mutans* in caries initiation.[8] There are several characteristics of *S. mutans* that are important relative to dental caries in children:

- ☐ Colonization and continued presence of *S. mutans* in the oral cavity require the presence of a hard, nonshedding surface. Thus, the organism is not established in infants prior to tooth eruption.[9]
- ☐ Being a poor competitor, *S. mutans* is not readily established in the oral cavity, if the latter is already colonized by other organisms, resulting in a mature oral flora.[10]
- ☐ Sucrose facilitates the adherence of *S. mutans* to the tooth surface.[11]
- ☐ *S. mutans* has a metabolic optimum at about pH 5, which enables it to grow at low plaque pH, which inhibits other bacteria.[12]
- ☐ The source of infection of the infant with *S. mutans* is from within the family, most likely the mother.[13]
- ☐ A minimum threshold level of maternal *S. mutans* is necessary for transmission of the microorganism to the infant, suggesting that infants are more likely to become infected, if their mothers possess high salivary levels of *S. mutans*.[14]

S. mutans does not colonize the mouth of infants until sometime after the first teeth erupt. The transmission of the organism appears to be from the mother to the infant by way of maternal saliva, perhaps by kissing, using the mother's eating utensils to feed the infant, or by the infants putting their fingers in their mother's mouths and then in their own. If the infant has a high sucrose diet, i.e. frequent sugar snacks such as dry sugar-coated cereal, bedtime or naptime bottle, or the bottle used as a pacifier during the daytime, the establishment and growth of *S. mutans*, then, is facilitated, leading to a decreased oral pH.

The early establishment, therefore, of oral hygiene procedures, with the development of noncariogenic dietary habits, should begin during infancy.

EARLY HABIT DEVELOPMENT IN CHILDREN

The development of basic habits and patterns such as dietary likes, dislikes, and food preferences occur very early in life.[5-7] This holds true also for such daily routines as tooth cleaning. Finally, prolonged use of the bottle beyond twelve months of age can lead to the infant becoming overly dependent on the bottle and to the eventual development of potentially damaging habits, such as the use of the bottle at night and its use as a pacifier during the day. The development of sound healthy habits during infancy offers the child the greatest potential for avoiding dental disease.

SUCCESSFUL PREVENTION OF DENTAL DISEASE IN CHILDREN

Systemic fluoride received through the ingestion of optimally fluoridated drinking water has been proven to

decrease caries by 50-60 percent.[15] In areas where the drinking water contains less than optimal fluoride levels, systemic supplementation can result in comparable caries reduction. Infants who are totally breast-fed should also receive supplemental fluorides.

In order to provide proper levels of fluoride supplementation, the level of fluoride in the drinking water must be determined before prescribing supplements. This can only be accomplished by water analysis and the interpretation of such results by a dentist. Unfortunately, pediatricians and physicians rarely request a water analysis to determine existing fluoride levels before prescribing fluoride supplements. If children do not see a dentist until three years of age, three valuable years of fluoride protection could be lost.

Many dental health professionals who reared children after receiving their dental education, have been successful in rearing caries-free children. Their success resulted from making critical decisions early in infancy regarding feeding patterns, diet and snacking behaviors, fluoride management, and tooth cleaning programs. These decisions were based upon considerable knowledge of the caries process and the methods of prevention. Parents of infants usually do not have access to this information to help them make proper critical decisions, except through consultation with dental health professionals.

DISEASE PREVENTION: EARLY EVALUATION AND INTERVENTION

When health professionals are aware that the potential for the development of disease exists and that there are effective measures available for preventing the initiation of the disease, it is, then, a logical and sound health practice to utilize those measures to prevent the disease, rather than to wait and treat the effects of the disease. In pediatric medicine, such examples are illustrated by the practice of immunization. Pediatricians recommend that the infant be evaluated five times during the first year and three times during the second year of life.[16] These visits are referred to as "well-baby" visits and have the early detection and prevention of disease as their main objective. Physicians are not adequately trained to perform a thorough dental evaluation and/or proper counseling, regarding the prevention of dental disease. The dental profession must assume this responsibility.

THE ADVANTAGES OF AN INFANT ORAL HEALTH PROGRAM

The main benefit of early involvement in oral health care for infants is the opportunity to intercept behaviors that are potentially damaging to children's oral health, and to provide valuable preventive information to parents, which is structured to meet the individual needs of each family situation.

The specific advantages of an Infant Oral Health Program are:

- ☐ Intercept and modify detrimental feeding habits.
- ☐ Assist parents in establishing snacking and dietary patterns that are favorable for dental health.
- ☐ Education of parents regarding their role in tooth cleaning for their infants/toddlers.
- ☐ Determination of the fluoride status and recommendations for an optimum fluoride program.
- ☐ Introduction of dentistry to the child in a pleasant, nonthreatening manner.
- ☐ Opportunity to promote a positive image for dentistry.

The early evaluation of infants and preventive counseling offer the dental profession the opportunity to improve the image of dentistry. When approximately 50 percent of the population avoids dentistry, with fear being one of the reasons, a pleasant nonthreatening introduction to dentistry can only advance dentistry's image.

PUBLIC AND PROFESSIONAL ATTITUDES

Experience gained in the University of Iowa's Infant Oral Health Program has revealed a growing desire by parents of infants and toddlers to receive an early dental evaluation and obtain information on the prevention of dental disease in their children. Participating parents have been interviewed regarding their reasons for bringing their infant/toddler for a dental visit, and 90 percent of the parents responded that they were seeking information on preventing dental disease. Some of their reasons were that they did not want their children to experience dentistry as they had and that they wanted their children to have a positive introduction to dentistry. Also, many parents wanted to know what role they could play at home with their infant, in order to assure the greatest potential for preventing dental disease.

Unfortunately, an all-too-frequent response has been that the parents were discouraged, because they were unable to find a dentist who would be willing to see their child for a dental visit before three years of age. One

mother's response on the preappointment questionnaire to the question of why she chose the Infant Oral Health Program, exemplifies a growing attitude among parents of infants/toddlers, as dental consumers. She stated: "I want to bring my twenty-month-old daughter to see a dentist who believes in early dental care before the age of three years."

Professionally, the American Society of Dentistry for Children recommends in The Answer Book that children should visit the dentist between six and twelve months of age.[17] Dental professionals who provide care for children should be prepared, therefore, to provide the service that we ourselves recommend.

SUMMARY

Because of their current knowledge about nursing caries, pit and fissure caries in toddlers, the effectiveness of pit and fissure sealants, fluorides, factors that influence dental caries, and the most recent and appropriate feeding and dietary recommendations, dentists are in a singular position to assist parents in rearing children who are caries-free. If we begin before the onset of that disease, our chances for success are greatly enhanced. Children's oral health should not be ignored or neglected until three years of age. Increasingly, parents of infants and toddlers are requesting preventive dental services for their children.

As a profession we need to stand behind the American Society of Dentistry for Children's recommendation and be willing to provide preventive dental services for infants between six and twelve months of age. We are entering a new and wonderful era in dentistry where we have the opportunity to offer today's children the greatest potential for avoiding dental disease.

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Infant oral health: a protocol

Stephen J. Goepferd, DDS, MS

The dental profession possesses the necessary knowledge and technology to assist parents in rearing caries-free children. Dentists have the opportunity to help infants and toddlers avoid the pain and devastation that accompanies "nursing caries", provide them with a pleasant nonthreatening introduction to dentistry, and help establish and reinforce the foundation of preventive dental habits. To assist dentists in their efforts to meet the growing request by parents of infants and toddlers for early evaluation and assistance in dental disease prevention, the following protocol was developed from the experiences gained in the University of Iowa's Infant Oral Health Program.

INCREASING PUBLIC AWARENESS

In an effort to educate parents of infants and toddlers regarding the benefits of early dental evaluation and counseling on preventive dental procedures, informational literature can be distributed to them from the following sources:

- ☐ Prenatal parenting programs.
- ☐ OB-GYN offices.
- ☐ Newborn information packets.
- ☐ Pediatrician and family physician offices during "well-baby" visits.

Not only will the parents become informed of the benefits of early dental programs, but they will also be made

Figure 1. Preappointment information form 1—Biographical.

The University of Iowa
College of Dentistry
Department of Pediatric Dentistry

Date

Biographical Data (Filled out by parent or guardian)

Name Sex Race

Nickname Age Birthdate

Pets, hobbies

Home address

Phone

Father's Name Age Marital status: S M W D Se

Place of business Phone

Business address

Mother's Name Age Marital status: S M W D Se

Place of business Phone

Business address

Legal guardian (if other than parent)

Place of business Phone

Business address

Brothers/sisters (names and ages)

Person responsible for this account

Is your child covered by
☐ Social agency Agency

☐ Dental insurance Number

Referred by

Reason for seeking care

Growth and Development

Developmental Milestones

Sitting alone	mo.	Crawling	mo.	First word	mo.
First tooth	mo.	Standing alone	mo.	Walking alone	mo.

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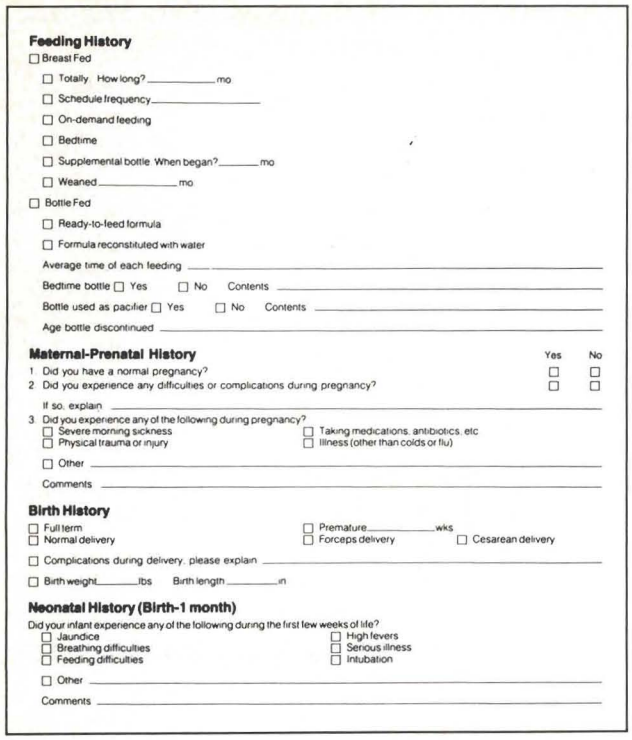


Feeding History

☐ Breast Fed

☐ Totally. How long? _____ mo

☐ Schedule frequency _____

☐ On-demand feeding

☐ Bedtime

☐ Supplemental bottle. When began? _____ mo

☐ Weaned _____ mo

☐ Bottle Fed

☐ Ready-to-feed formula

☐ Formula reconstituted with water

Average time of each feeding _____

Bedtime bottle ☐ Yes ☐ No Contents _____

Bottle used as pacifier ☐ Yes ☐ No Contents _____

Age bottle discontinued _____

Maternal-Prenatal History Yes No

1. Did you have a normal pregnancy? ☐ ☐
2. Did you experience any difficulties or complications during pregnancy? ☐ ☐

If so, explain _____

3. Did you experience any of the following during pregnancy?
   ☐ Severe morning sickness ☐ Taking medications, antibiotics, etc
   ☐ Physical trauma or injury ☐ Illness (other than colds or flu)

☐ Other _____

Comments _____

Birth History

☐ Full term ☐ Premature _____ wks
☐ Normal delivery ☐ Forceps delivery ☐ Cesarean delivery

☐ Complications during delivery, please explain _____

☐ Birth weight _____ lbs Birth length _____ in

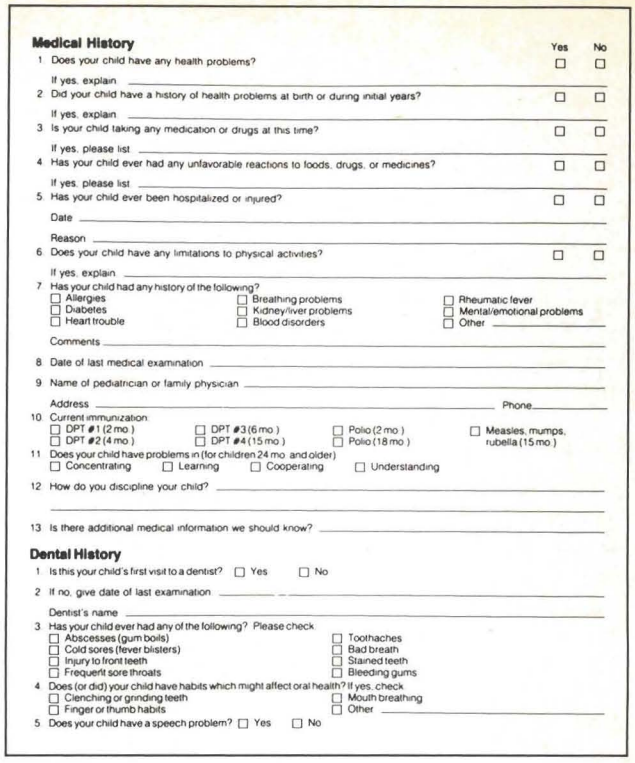
Neonatal History (Birth-1 month)

Did your infant experience any of the following during the first few weeks of life?
☐ Jaundice ☐ High fevers
☐ Breathing difficulties ☐ Serious illness
☐ Feeding difficulties ☐ Intubation

☐ Other _____

Comments _____

Figure 2. Preappointment information form 2—Feeding and developmental histories.



Medical History Yes No

1. Does your child have any health problems? ☐ ☐

If yes, explain _____

2. Did your child have a history of health problems at birth or during initial years? ☐ ☐

If yes, explain _____

3. Is your child taking any medication or drugs at this time? ☐ ☐

If yes, please list _____

4. Has your child ever had any unfavorable reactions to foods, drugs, or medicines? ☐ ☐

If yes, please list _____

5. Has your child ever been hospitalized or injured? ☐ ☐

Date _____

Reason _____

6. Does your child have any limitations to physical activities? ☐ ☐

If yes, explain _____

7. Has your child had any history of the following?
   ☐ Allergies ☐ Breathing problems ☐ Rheumatic fever
   ☐ Diabetes ☐ Kidney/liver problems ☐ Mental/emotional problems
   ☐ Heart trouble ☐ Blood disorders ☐ Other _____

Comments _____

8. Date of last medical examination _____
9. Name of pediatrician or family physician _____

Address _____ Phone _____

10. Current immunization:
    ☐ DPT #1 (2 mo.) ☐ DPT #3 (6 mo.) ☐ Polio (2 mo.) ☐ Measles, mumps, rubella (15 mo.)
    ☐ DPT #2 (4 mo.) ☐ DPT #4 (15 mo.) ☐ Polio (18 mo.)
11. Does your child have problems in (for children 24 mo. and older)
    ☐ Concentrating ☐ Learning ☐ Cooperating ☐ Understanding
12. How do you discipline your child? _____
13. Is there additional medical information we should know? _____

Dental History

1. Is this your child's first visit to a dentist? ☐ Yes ☐ No
2. If no, give date of last examination _____

Dentist's name _____

3. Has your child ever had any of the following? Please check
   ☐ Abscesses (gum boils) ☐ Toothaches
   ☐ Cold sores (fever blisters) ☐ Bad breath
   ☐ Injury to front teeth ☐ Stained teeth
   ☐ Frequent sore throats ☐ Bleeding gums
4. Does (or did) your child have habits which might affect oral health? If yes, check
   ☐ Clenching or grinding teeth ☐ Mouth breathing
   ☐ Finger or thumb habits ☐ Other _____
5. Does your child have a speech problem? ☐ Yes ☐ No

Figure 3. Preappointment information form 3—Medical history.

aware that the service exists and where information may be obtained.

PREAPPOINTMENT QUESTIONNAIRE

A preappointment packet of information demonstrates to parents that you and your staff firmly believe in the concept of infant oral health and that you are supportive of their efforts to prevent dental disease. The information packet should include a welcome letter congratulating them on their initiative in seeking proper oral health for their children. Information on patient registration may also be included. Most importantly, however, is a preappointment questionnaire that will provide the dentist with valuable information about the infant and family. The information will assist in the development and streamlining of the counseling portion of the appointment. The result will be a pertinent and individualized discussion of a preventive dental approach most appropriate for each family's particular needs and situation. Figures 1, 2, and 3 are examples of the preappointment information forms used in the Infant Oral Health Program at the University of Iowa. Although most of the informational categories are self-explanatory, a few areas are worthy of further explanation.

Growth and development

An abnormal pattern of development may be discovered or suspected. Also, the date of the eruption of the first tooth will provide a baseline for dental development. Combined, this information will provide the dentist with a basis for answers to questions regarding an infant's dental development.

Feeding history

Knowledge of the feeding patterns during infancy is very important to assist you in your assessment of the potential for "nursing caries" by discovering potentially harmful feeding habits and to help form a basis for recommendations regarding the proper feeding methods for minimizing the potential for dental disease (i.e. when to discontinue the bottle, avoiding bedtime bottles, etc.).

Prenatal-natal-neonatal history

Information about difficulties during each of these three periods may provide clues regarding dental developmental anomalies that may appear with the eruption of affected teeth in the future.

Medical history

A complete medical history is important. A knowledge of any systemic conditions that may affect the patient's general and oral health, and your selection of a treatment plan and personalized regimen of prevention techniques is necessary. For example, you may wish to make certain additional recommendations for tooth-cleaning for an infant who is taking chronic low doses of a sugar-based antibiotic two to four times daily to prevent recurring episodes of ear infections.

Dental history

This information will provide you with clues to potential dental problems. Positive answers to these questions can be a starting point for your discussion with the parents regarding the child's dental status. Your discussion will provide you with insight regarding the parents' dental I.Q. and level of interest.

The preappointment information should be reviewed briefly prior to greeting the parents and their child to help you formulate a pertinent and individualized approach to each child and family situation.

THE INTERVIEW

It is important to be thorough and specific, yet concise in your discussion with the parents. The attention span of infants is limited. Once they become bored and seek the attention of the parent, the attentiveness of the parent during the discussion will be limited at best. Experience shows that the interview and counseling are best accomplished before the examination of the infant, for several reasons:

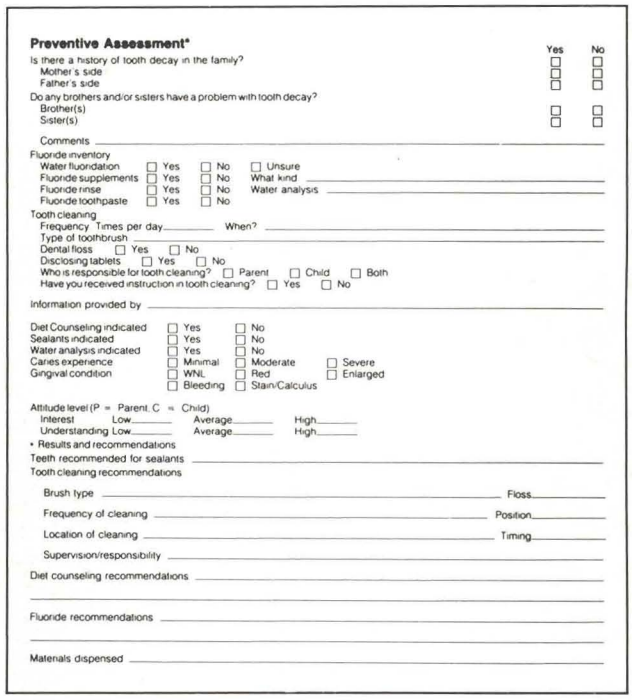
- ☐ Any specific concerns that the parents may have can be identified and then addressed during the examination, if appropriate.
- ☐ If the infant should fuss during the examination (normal behavior), the parent(s) usually direct their attention to the child during the discussion following the examination and not to the dentist.
- ☐ The child can be kept busy with toys and other items before the examination in a nonthreatening environment and the parent(s) can direct their attention to the discussion.

The interview should begin with a discussion of the parents' reason for seeking care. The preappointment information should be reviewed briefly and confirmed. Of most importance is the feeding history. Appropriate educational information and recommendations regarding infant feeding patterns and dental health should be offered at this time, when indicated.

Following the review and confirmation of the information regarding the medical and dental histories, the discussion should progress to the preventive assessment.

Preventive assessment

The information outlined on the preventive assessment form (Figure 4) is obtained during this portion of the interview and will assist you in assessing the dental "awareness" of the parents, their perception of dentistry and dental disease, and what level of dental prevention already exists in the family, if any.



Preventive Assessment*

	Yes	No
Is there a history of tooth decay in the family?		
Mother's side	☐	☐
Father's side	☐	☐
Do any brothers and/or sisters have a problem with tooth decay?		
Brother(s)	☐	☐
Sister(s)	☐	☐

Comments _____

Fluoride inventory
Water fluoridation ☐ Yes ☐ No ☐ Unsure
Fluoride supplements ☐ Yes ☐ No What kind _____
Fluoride rinse ☐ Yes ☐ No Water analysis _____
Fluoride toothpaste ☐ Yes ☐ No

Tooth cleaning
Frequency Times per day_____ When? _____
Type of toothbrush _____
Dental floss ☐ Yes ☐ No
Disclosing tablets ☐ Yes ☐ No
Who is responsible for tooth cleaning? ☐ Parent ☐ Child ☐ Both
Have you received instruction in tooth cleaning? ☐ Yes ☐ No

Information provided by _____

Diet Counseling indicated ☐ Yes ☐ No
Sealants indicated ☐ Yes ☐ No
Water analysis indicated ☐ Yes ☐ No
Caries experience ☐ Minimal ☐ Moderate ☐ Severe
Gingival condition ☐ WNL ☐ Red ☐ Enlarged
☐ Bleeding ☐ Stain/Calculus

Attitude level (P = Parent, C = Child)
Interest Low_____ Average_____ High_____
Understanding Low_____ Average_____ High_____

* Results and recommendations
Teeth recommended for sealants _____
Tooth cleaning recommendations
Brush type _____ Floss_____
Frequency of cleaning _____ Position_____
Location of cleaning _____ Timing_____
Supervision/responsibility _____
Diet counseling recommendations _____
_____
Fluoride recommendations _____
_____
Materials dispensed _____

Figure 4. Preventive assessment form.

HISTORY OF TOOTH DECAY IN THE FAMILY

This will provide you with information regarding the parents knowledge and beliefs regarding the cause of dental disease (i.e. "soft teeth", etc). A positive response should be pursued to determine the type and extent of dental problems and how the parents perceive their own dental health affecting their child.

FLUORIDE INVENTORY

It is important to know whether the child has lived and/or is living in a fluoridated community, it is important to determine whether the child is drinking the water and not drinking "bottled water" and other nonfluoridated fluids. It is also important to determine whether the child has received, or is receiving any fluoride supplements; and if so, what type, in what concentration, and how often. Finally, children who are "totally" breastfed should receive appropriate fluoride supplementation until they are weaned or begin drinking fluoridated water or liquids prepared with it.

TOOTH CLEANING

Keep in mind that many parents think that allowing an infant to "brush" his own teeth is adequate. If the infant's teeth are being cleaned, determine how, when, and by whom.

DIET ASSESSMENT

Primary concern should be directed to determining the child's eating patterns; especially, the snacking habits and the type of snacks.

Counseling

Based upon the information gathered thus far, the dentist is ready to make recommendations on how the parents may play an active role in preventing dental disease in their child by assuming the responsibility for two very important areas of their child's dental preventive program. These two areas are "Tooth Cleaning" and "Diet Management".

TOOTH CLEANING

The following facts about tooth cleaning should be emphasized and explained to the parents.

- ☐ A parent, adult or older sibling must assume total responsibility for tooth cleaning in infants and young children. Many children are unable to clean their teeth effectively until five to eight years of age.
- ☐ Tooth cleaning should be done in a comfortable location and a pleasant environment. Positioning will be demonstrated later.
- ☐ Toothpaste is not necessary for infants and, in fact, may be a source of objection, because of the taste and foaming action.
- ☐ Parents may wish to begin with a piece of gauze or a clean washcloth with the eruption of the first tooth and change to a toothbrush as soon as they feel comfortable about making the change.
- ☐ Tooth cleaning should be done at least once daily; wiping the teeth of the infant following feedings is recommended, however.
- ☐ The evening tooth cleaning may be easier to accomplish after the infant's last feeding than just before bedtime, since a tired infant can frequently be cranky and may fuss during the procedure.

DIET MANAGEMENT

Parents have control, for the most part, over their child's diet. The exceptions are baby sitters and day care programs. Parents can have some influence in these areas, however, if they make their wishes known. The following facts should be presented to the parents:

- ☐ Infants and young children generally need to eat more frequently than three times daily.
- ☐ Between-meal snacks should consist of foods that have least potential for promoting acid production. Sugar snacks and retentive foods, therefore, should be avoided.
- ☐ Harmful acids are usually produced during the regular mealtimes.
- ☐ Potentially harmful foods like cakes, cookies, and raisins are better offered at mealtimes, than as between-meal snacks.
- ☐ The total amount of sugar consumed is not the key; rather, the frequency of the sugar intake and the retentiveness of the food are the important factors.
- ☐ In terms of harmful effects on the teeth, the term "sugar" means all forms of sugar, natural or added, refined carbohydrates etc. Parents should be encouraged to read labels, and cautioned about alleged "natural health foods" with reference to their cariogenic potential.

THE EXAMINATION OF INFANTS AND TODDLERS

Once the counseling and discussion aspects of the appointment are completed, the dentist is ready to proceed with the examination of the patient. The dental chair and overhead light are neither required nor very useful for examining the infant or toddler. Since one of the prime objectives is to provide a dental examination in a pleasant, nonthreatening manner, the procedure is best accomplished in the knee-to-knee position (Figure 5). This position provides a stable, comfortable environment that incorporates the security of parental involvement, and has a calming effect on infants and toddlers who lack the cognitive ability to cooperate. Should the child offer resistance, the dentist can easily and gently stabilize the child's mouth and head cradled in the lap, while the parent holds the child's hands and can stabilize the legs by cradling them with the elbows (Figure 5). Many of the infants and toddlers accept the examination procedures in this position without resistance. It is important for those children who do resist or cry, that the parents be assured that the behavior is normal for their age, and is not to be considered "bad" or "uncooperative."

The examination should begin with a soft touch, evaluating the extraoral head and neck conditions first, al-

lowing the child to become accustomed to the dentist's touch. The examination of the oral cavity should begin by using the fingers to palpate the oral structures before introducing the dental instruments. Illumination can be provided with a penlight or flashlight, held by the dental assistant. Access and stabilization of the mouth can be obtained by placing a finger on the gum pad distal to the most posterior tooth in a maxillary quadrant. Following inspection of the oral soft and hard tissues, a dental cleaning (plaque removal) is accomplished with a soft bristled, moist, child-sized toothbrush. Rarely will a rubber cup and polishing paste be required for stain removal. The tooth cleaning process is discussed and demonstrated as you remove the plaque. At this point, it is very critical that the child be repositioned with the head cradled in the parent's lap and the parent given the opportunity to practice the tooth cleaning process with the dentist's supervision and guidance (Figure 6). This will help some parents get over their reluctance to clean their child's teeth, especially when the child resists. Occasionally, some infants and toddlers exhibit tight contacts between the anterior as well as the posterior teeth, which accumulate considerable plaque. The parent can be taught to clean these areas using dental floss in a holder, with relative ease. Once the parent is comfortable with the tooth cleaning process, the examination portion of the appointment is completed.

The parents are advised that they need to perform the tooth cleaning for their child at least once per day, preferably following each meal. The most critical time to clean the teeth is following the last meal or snack of the day. It is emphasized that tooth paste is not required and is usually objectionable to the infant. If it is used, only a minimal quantity should be placed on the brush.

It should also be emphasized early that when the child is becoming accustomed to the routine of having a parent brush the teeth, the tooth cleaning should not become an unpleasant struggle for those infants and toddlers who initially resist the procedure. On those occasions where the child struggles considerably, the procedure should not be abandoned. Rather, less attention can be placed on performing thorough plaque removal, while maintaining a consistent effort to establish a routine with the child. A more thorough tooth cleaning can be performed another day, when the child is more cooperative. Parents can be reminded of other routines that are accomplished in spite of the child's objections, such as washing the hair. If the tooth cleaning routine is established during the first twelve months, strong objections and resistance to the procedure during the "terrible two's" can usually be avoided.

Figure 5. Knee-to-knee position for infant oral examination.

Figure 6. Tooth cleaning practice by the parent.

CONCLUDING THE APPOINTMENT

The appointment is concluded by addressing the following areas:

- ☐ Provide the parents with a summary of your clinical findings.
- ☐ Provide the parents with any additional recommendations based upon the clinical findings.
- ☐ Solicit and answer any remaining questions that the parents may have.
- ☐ Reinforce the two areas of parental responsibility, tooth cleaning and diet management.
- ☐ Establish an optimal fluoride program, which may necessitate making arrangements for a water analy-

Table ☐ Criteria for recall schedule and determination.

Recall period	Clinical findings	Feeding/Diet patterns	Dental development
3 Month	Enamel decalcification Considerable plaque build-up Amelogenesis Imperfecta Dentinogenesis Imperfecta	Bottle used at bedtime/naptime Bottle is used as a pacifier Bottle used past 20 mo. of age Frequent cariogenic snacking pattern	Stage of dental development has minimal influence on the 3 month interval recall category.
6 Month	Posterior proximal contacts No previous tooth cleaning Primary dentition crowding Moderate plaque build-up	Relatively cariogenic diet/snacks	Second primary molar eruption is expected within 6 months.
12 Month	Generalized spacing present Good oral hygiene exhibited Shallow occlusal anatomy	Good dietary habits exhibiting a low cariogenic potential	Second primary molar eruption is expected in 6-12 months.

sis to determine existing fluoride levels before prescribing supplemental fluoride.

- ☐ Distribute pamphlets on diet, children's dental health and development, and "nursing caries" to the parents. (ADA pamphlets #W159, W177, and W166; ASDC pamphlets: Infant Nursing, Sugar Content of Dry Cereals, Home Dental Care for the Infant, Why X-ray Children's Teeth, and The Answer Book.
- ☐ Establish an appropriate recall schedule.

Establishing a recall schedule

The recall appointment may be scheduled for three, six, or twelve months, depending upon the child's potential risk for developing dental disease. The following factors are considered when making this determination.

- ☐ Clinical findings.
- ☐ Stage of dental development.
- ☐ Feeding practices.
- ☐ Dietary practices and snacking patterns.

Examples illustrating how the various criteria influence determination of the recall schedule are listed in the Table. The presence of any one of the factors is sufficient to place the patient in the three-month or six-month category.

During the recall appointment, the dentist should assess the parents' tooth cleaning efforts, evaluate the feeding practices and snacking patterns, and determine the extent of the parents' compliance with the prevention program that was previously recommended and with any suggestions or modifications that were made. Parents should be congratulated on their efforts where appropriate and reinforcement of their role in their child's oral health should be accomplished.

SUMMARY

The potential exists today for dental health professionals to assist parents in rearing caries-free children. The knowledge and technology are available and the request for this service is growing. The dental professional has the opportunity to accept this role with enthusiasm and continue to be a leader among the health professions in disease prevention. The dental profession must not ignore the oral health needs of infants and toddlers under three years of age. We must instead, take advantage of our knowledge and technology and begin our disease prevention efforts with children as infants, and educate parents regarding their important role in the oral health of their children. By doing so we can provide a pleasant and logical introduction to dentistry and promote the profession in a most positive way.

Are the unmet needs of children overshadowed by our concern for the aged?

H. Barry Waldman, DDS, MPH, PhD

It borders on sacrilege even to consider the possibility that the concerns about the health, living, social and economic status of the aged are receiving too much emphasis. The daily assault of news articles, conferences, television presentations, political speeches and a seemingly infinite number of other documentations, surely have convinced the general population that the needs of the aged far surpass our understanding—even our imagination. This is not to say that the increasing population of older women (mostly) and men do not need a host of necessary support functions. Rather, it is to raise the question of whether the needs of other segments of the population (in particular, children) are being overlooked as the government and the general population increasingly turn their attention to the elderly.

ECONOMICS

Many of the aged are experiencing economic difficulties; particularly aged women who do not live in a family setting. On a numerical and percent basis, however, far more children under age eighteen are living in conditions of poverty than are the elderly (65 years and older). Between 1970 and the early 1980s, the number and percent of elderly poor decreased. During the same period, the number and percent of poor children increased. By 1983, 21.7 percent of the children under eighteen years (13.3 million) and 14.1 percent of the elderly (3.7 million) were living in conditions of poverty (Table 1).

In addition, a quarter of all the children under six years of age and more than 55 percent of the children living in families headed by a woman (6.7 million children) were designated as "poor" under federal economic standards (Table 1). Nearly a half of all black children under sixteen years of age live in conditions of poverty. A greater percentage of white, black and Hispanic children were poor compared to their elderly counterparts (Table 2).

During the past twenty-five years, the economic status of the aged has improved substantially. For both married couples and nonmarried persons, real income increased about 75 percent between 1962 and 1984; i.e. their median income increased 75 percent more than the increase in the Consumer Price Index during that period. For example, among aged persons not living with relatives, the rate of poverty declined from 66 percent in 1960 to 26 percent in 1983.[1] Although the gap between income levels of the elderly and nonelderly widened between 1960 and 1970, it narrowed between 1970 and 1983, reflecting, to some degree, increases in social security benefits over the increases in the rate of inflation. During the same period, average wages did not keep pace with inflation.[1]

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Table 1 ☐ Number and percent of poor persons by age: at the end of 1970, 1980 and 1983.[5,11]

	Number (in millions)			Percent		
	1970	1980	1983	1970	1980	1983
Total population	25.3	29.3	35.3	12.6%	13.0%	15.2%
Children under 18	10.5	11.1	13.3	15.0	17.9	21.7
In familes with:						
Male householder*	5.7	5.2	6.6	9.3	10.4	13.4
Female householder	4.8	5.9	6.7	53.4	50.8	55.4
18-54 years	8.2	12.2	15.8	8.7	10.5	13.0
55-65 years	2.1	2.1	2.4	11.4	9.5	10.9
65 and older	4.7	3.9	3.7	24.6	15.7	14.1
In familes	2.0	1.4	1.4	14.7	8.5	8.1
Unrelated individuals						
Men	.5	.4	.4	38.9	24.4	22.1
Women	2.2	2.0	1.9	49.7	32.3	27.7
Less than 6 years						25.0
6-17 years						20.8
18-24 years						17.2
25-44 years						11.9
45-64 years						10.0

* Includes children in families with both spouses present and in families with male householder with no spouse present.

Table 2 ☐ Percent of the population below the poverty line by age, race and Hispanic origin: 1983.[5]

Age	All	White	Black	Hispanic*
Less than 16	22.7	17.8	47.2	38.8
16-21	17.9	13.7	40.7	29.9
22-44	12.6	10.3	28.4	23.4
45-64	10.1	8.2	25.5	17.0
65 & over	14.1	12.0	36.3	23.1
Total	15.2	12.1	35.7	28.4

* May be of any race

Table 3 ☐ Population with no dental visits in the past two years by poverty level for ages under eighteen and sixty-five and over: 1981.[11,12]

	Total Population (in millions)		Percent with no dental visit in past two years		Population with no dental visit in past two years (in millions)	
Age	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor
Under 18	49.6	12.1	36.6*	52.6*	18.2	6.4
65 and over	21.3	3.9	49.9	70.0	10.6	2.7

*Percent is for population under 17 years of age. Could tend to increase percent of population with no dental visits.

USE OF HEALTH SERVICES

"One characteristic of the disadvantaged is their lack of some of the privileges of life . . . including access to health, wholesomeness and all those services that promote a healthy way of life."[2]

The litany of needed services for the aged, and associated economic and social costs, have dominated the discussion of the health of the general population. Far less attention has been directed to the need for, and use of health and social services by children—poor and nonpoor.

Dental needs

☐ In 1981, over ten million nonpoor aged and over two million poor aged had not visited a dentist in the previous two years. Eighteen million nonpoor and six million children under age eighteen, however, had not seen a dentist during the same period (Table 3).

☐ During 1978 through 1980, almost 10 percent of non-Hispanic white children between four and sixteen years of age had never been to a dentist. But among the various minority populations, between 16 percent and 30 percent of the children had never been to a dentist (Table 4).

☐ During the 1978 through 1980 period, 68 percent of white children between four and sixteen years of age visited a dentist. Only 43.5 percent of black children and 39 percent of Mexican American children, however, reported dental visits (Table 5).

☐ In 1979-1980, almost a quarter of white children and 40 percent of nonwhite children were in need of

Table 4 ☐ Percent of persons four years of age and over who never received dental care, by race, Hispanic origin and age: 1978-80.[13]

	Non-Hispanic White	Non-Hispanic Black	Mexican Amer.	Puerto Rican	Cuban Amer.	Other Hispanic
All ages	2.5	9.2	17.4	6.9	3.1	6.9
Age						
4-16 yrs	9.7	22.3	30.7	17.2	16.2	17.1
17-44 yrs	0.8	4.8	13.1	3.6	0.8*	4.2
45-64	0.3	1.7	7.9	1.5*	0.7*	2.6*
65 yrs & over	0.3	2.1	10.3	1.8*	1.0*	2.8*

*More than 30 percent relative standard error.

Table 5 ☐ Percent of persons four years of age and over who received dental care in the past year, by race and Hispanic origin: 1978-80.[13]

	Non-Hispanic White	Non-Hispanic Black	Mexican Amer.	Puerto Rican	Cuban Amer.	Other Hispanic
All ages	55.8	36.9	34.5	45.6	45.5	49.8
Age						
4-16 yrs	68.0	43.5	39.0	53.8	56.8	58.2
17-44 yrs	58.1	39.2	33.1	44.1	51.0	48.3
45-64 yrs	51.8	29.6	34.0	41.4	41.0	48.1
65 yrs & over	34.4	17.5	23.2	19.3*	27.9	34.7

*More than 30 percent relative standard error.

restorations for their permanent dentitions (Table 6). In addition, large numbers of extractions, replacements, crowns, and other services were required. The dental needs of nonwhite children were greater than the service needs of white children (Table 7).

General medical needs and preventive services

- ☐ Infant mortality rates have continued to decline from 23.6 deaths per 1,000 live births in 1965-67 to 10.6 deaths per 1,000 live births in 1984. But persistent high infant mortality rates exist for nonwhite groups.[3,4]
- ☐ Substantial variations in infant mortality rates exist among the States. In 1979-81, black infant mortality rates ranged from 16.4 deaths per 1,000 live births in the Commonwealth of Massachusetts to 25.9 deaths per 1,000 live births in the State of Illinois.[3]
- ☐ In 1983, approximately a third of all children between one and four years of age had not received measles, rubella and diphtheria-tetanus-pertussis vaccinations. Approximately 40 percent had not received vaccines for polio and mumps. Almost two thirds of nonwhite children between one and four years of age had not received polio vaccines.[3]
- ☐ In 1981, children under seventeen years of age had 322 incidents of acute medical conditions per 100 children compared to 117 incidents per 100 aged individuals. Children under seventeen years of age had 4.4 bed-disability days per 100 children, compared to 4.9 bed-disability days per 100 aged individuals.[3]
- ☐ In 1982, 49.5 percent of children between twelve and seventeen years of age had smoked cigarettes and 14.7 percent currently smoked.[5]

General areas of concern

- ☐ *High school dropout rate:* In 1983, over 15 percent of all children and almost 20 percent of blacks who reached the age of high school graduation had dropped out of school prematurely.[5]
- ☐ *Teenage unemployment:* In October 1985, 20.4 percent of white males and 46.3 percent of black males between sixteen and nineteen years of age were unemployed. Similarly, 16.5 percent of white females and 39.8 percent of black females between ages sixteen and nineteen years of age were unemployed.[6]
- ☐ *Teenage pregnancy and abortions:* In 1981, 8,600 unwed females under age fifteen gave birth; 259,200 unwed females between fifteen and nine-

Table 6 ☐ Percent of children needing treatment in the primary and permanent dentitions by race: 1979-80.[14]

	Primary dentition		Permanent dentition	
	White	Non-white	White	Non-white
Restorations	30	40	24	33
Extractions	6	8	1	4
Crowns	5	7	2	5
Replacements	—	—	2	6
Pulpal treatment	—	—	1	4

Table 7 ☐ Treatment needs for children aged five to seventeen years by race: 1979-1980.[14]

	White	Non-white
	(Per 100 children)	
Permanent restorations	63.72	107.60
Primary tooth extractions (age 5-9 years)	11.45	14.03
Permanent tooth extractions	1.62	6.62
Permanent tooth replacements	3.03	10.76
Crowns for primary teeth (age 5-9 years)	7.02	10.82
Crowns for permanent teeth	2.13	6.31
Pulpal treatments	1.44	5.17
Advanced periodontal destruction (age 17 years)	0.44	1.17

teen gave birth. In addition, 15,000 females under age fifteen had a legal abortion.[5]

- ☐ *Child neglect and abuse:* In 1982, almost a million instances of child neglect and/or abuse (may include more than one child per family) were reported. Between only 1978 and 1982, the rate of child neglect and/or abuse cases increased each year (2.7 cases per 1,000 individuals in 1978 and 4.0 cases per 1,000 individuals in 1982).[5]
- ☐ *Auto injuries:* In 1981, almost 800,000 children between six and sixteen years of age were injured in automobile accidents.[7]

GENERAL THOUGHTS

A list of the concerns about children could be endless, extending to areas of child kidnapping, nutritional status, teenage suicide, child pornography, handicapping conditions, the impact of divorces, etc. An extensive array of government and private agencies are directed to improve and maintain the health, social and economic state of children. In addition, most families direct unceasing energies and uncountable resources to rearing and assuring the well-being of their children. And yet, so much more is needed, if we are to assure the health and potential of the next generation.

For example, in 1983, only 3.7 percent of the children in the State of Maryland and 10.3 percent of children in the State of South Carolina who were eligible for dental services under the Medicaid program received at least one dental service.[8] In 1982, over a quarter of the children between twelve and seventeen years of age had smoked marijuana; 6.5 percent had used cocaine; and 5.2 percent used hallucinogens.[5] In 1980, among high school seniors, 52 percent of males and 31 percent of females reported heavy consumption of alcohol (five or more drinks in a row on one or more occasions during the two weeks prior to the national study).[9]

As increasing attention (particularly by the government) is directed to the seemingly all-consuming problems of the elderly, the needs of other age-groups have drawn less attention. Such attention by government officials should not be unexpected, when in the 1980 election, a third of the population that voted were fifty-five years and over; 70 percent of those aged fifty-five to seventy-four voted.[10] (Unfortunately, children can't vote!) Is there any wonder that Social Security benefits are not included in the current efforts to restore the federal budget to some semblance of balance?

The ongoing needs of children must continually be brought to the attention of the public and its representatives. The need is for balanced attention to the needs of all age-groups, including social and economic services, general medical and preventive services, and even dental care.

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Root resorption: a complication following traumatic avulsion

Trauma

Anne L. Symons, MDS

The aim of replantation following traumatic avulsion of teeth is to maintain the viability of the cells of the periodontal ligament to enable proper reattachment and avoid root resorption as a posttraumatic complication.[1] The viability of the periodontal ligament is dependent on the extraoral period. This viability decreases as the extraoral period increases. Andreasen and Hjørting-Hansen observed after periods of two or more years, that 90 percent of teeth replanted in less than thirty minutes following avulsion exhibited no discernible resorption of roots. Alternatively, root resorption occurred in 95 percent of the teeth replanted with an extraoral period of greater than two hours. This case history describes the management of avulsed teeth replanted after an extended extraoral period, in which progressive root resorption was a problem.

CASE REPORT

A girl, aged ten years and six months, fell from her bicycle, injured her left knee and avulsed the maxillary central incisors and the right lateral incisor. She was taken to the casualty section of a hospital to receive emergency treatment for her badly cut knee and it was then realized that the three teeth had been lost. The patient was advised to recover the teeth and seek dental assistance. Four hours elapsed from the time the teeth were avulsed to the time of replantation and stabilization with an acid-etch composite resin splint.

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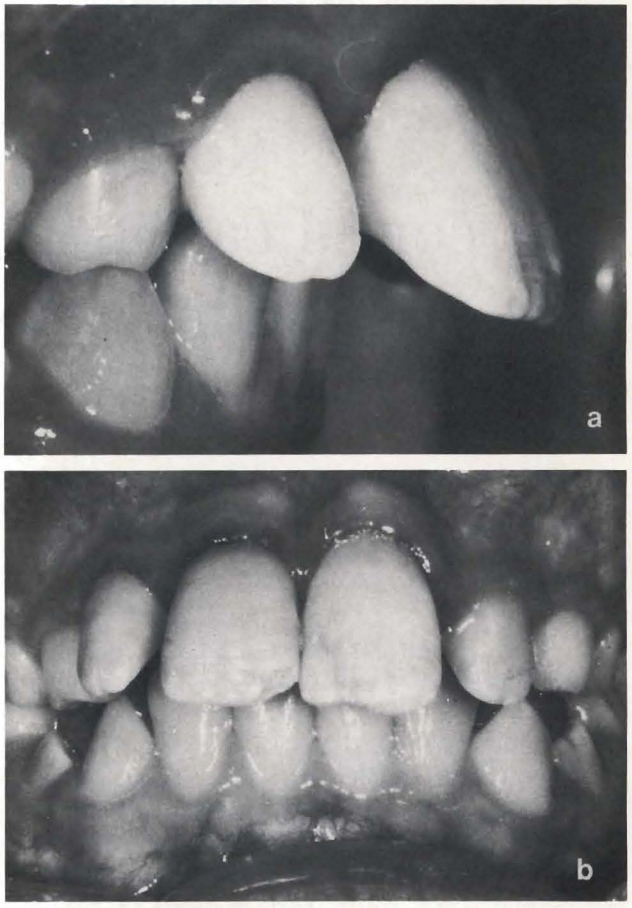
Five days later the patient presented at the Dental School Clinic. On examination, the splinted teeth appeared firm, but were tender to palpation; and the gingiva had not completely healed between the central incisors. No other soft tissue lesions were observed and the traumatized teeth did not respond to vitality tests. The patient had a severe Class II division 1 malocclusion in the mixed dentition stage, and there was only limited contact of the anterior segments during function (Figure 1). Radiographic examination revealed no root fractures (Figure 2). The apices of the central incisors appeared completed, but the apex of the maxillary right lateral incisor was open. Bone loss was readily apparent around the root of the maxillary left central incisor, as some socket preparation was performed by the emergency dentist to permit replantation.

Eight days after the accident the root canals of the avulsed teeth were biochemically cleansed and dressed with calcium hydroxide. The splint was removed at this appointment, but due to the mobility of the left central incisor, it was elected to resplint this tooth. One week later the splint was removed. Four weeks after the accident, the central incisors were obturated with gutta percha and sealing paste (Figure 3). The chipped incisal edges were restored with acid-etch composite resin restorations.

The patient did not return for a follow-up examination until four months later. On examination, the marginal gingiva was inflamed, due to poor oral hygiene; the traumatized teeth were firm; and the patient reported no symptoms. Radiographic examination (Figure 4) showed the central incisors to have undergone some apical resorption, made more evident by the fact that the root fillings now extruded through the apices. Most of the distal aspect of the maxillary right lateral incisor root had been resorbed by the erupting canine. The lateral incisor was extracted.

Three years after the injury, the central incisors remain firm and symptom-free, but most of the root surface is affected by replacement resorption (Figure 5). The maxillary right canine erupted into the lateral space and was tilted mesially. The canine has been tipped back into the correct position, using a removable orthodontic appliance that maintains the lateral incisor space. An acid-etch-retained composite resin bridge is planned, when canine eruption is complete. The protruding central incisors were recontoured, to improve their appearance, by reducing the labial surface bulk and the incisal edge (Figure 6).



Figures 1a, b. The maxillary incisors were protruded and labially inclined.

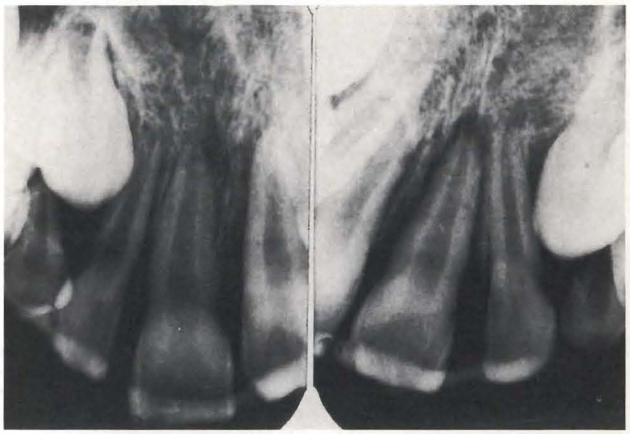
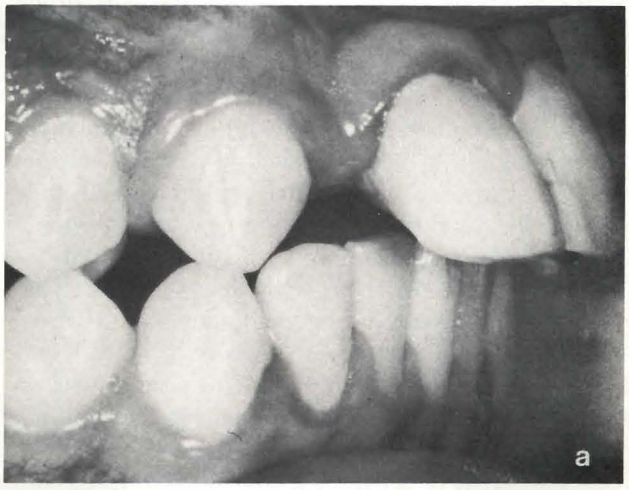


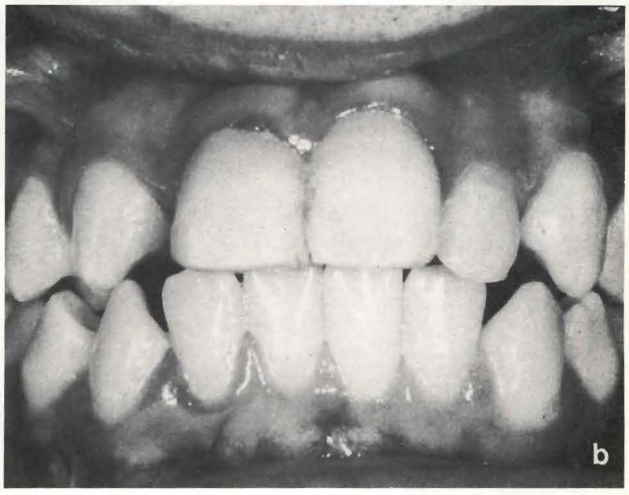
Figure 2. Periapical radiographs taken five days after replantation revealed no root fractures, acid-etch composite resin splint present. The apex of the right lateral is incomplete. Note the proximity of the upper right canine.

Figure 3. Radiograph taken four weeks after replantation showing gutta percha root fillings in the two central incisors and calcium hydroxide dressing in the right lateral incisor.

Figure 4. Periapical radiograph taken five months posttrauma revealed apical resorption of the central incisors and gross resorption of the right lateral incisor with eruption of the maxillary right canine.

Figure 5. Periapical radiograph showing replacement resorption of the central incisors, three years after the trauma.





Figures 6a, b. The maxillary incisors after recontouring the labial surfaces and incisal edges. The maxillary right canine is partially erupted.

DISCUSSION

Children with an increased overjet and protrusion of the upper incisors tend to suffer from a greater number of traumatic injuries to these teeth than children with a normal occlusal relationship.[1,3-5] As exarticulation of the teeth occurs, predominantly in the age-group from seven to ten years when the permanent incisors are

erupting, it may be difficult to protect the teeth adequately with a mouthguard or provide orthodontic treatment that will establish a normal relationship at this stage.

The long-term prognosis for the teeth replanted for the patient reported on in this paper is very poor, because of the damage to the periodontal ligament. Drying of the root surface and periodontal ligament would be expected during exposure to air and sunlight, when the avulsed teeth remained at the accident site. When teeth cannot be replanted immediately, storage media such as plastic foil, milk, saline or serum may be used to maintain the viability of the periodontal ligament.[6]

Radiographically, replacement resorption may be recognized approximately two months after replantation, beginning in the apical third of the root. In replacement resorption, ankylosis occurs. The root is resorbed and bone is deposited in its place.[7] Ankylosis will hold the tooth in its replanted position and in some cases this may alter the normal growth of the alveolar process, resulting in malocclusion. Careful assessment is required, therefore, before replanting partially erupted teeth. In this case the incisors appeared to be fully erupted and supported by well-formed alveolar bone. In progressive replacement resorption the root becomes incorporated in the remodelling cycle of the bone and is gradually replaced by bone. Complete replacement can take up to ten years to occur.[1,8,9]

When replanting a tooth closely associated with an erupting tooth it is essential to monitor the relationship of these teeth. Resorption of the replanted tooth may occur due to the pressure exerted by the erupting tooth and posttraumatic inflammation. This is particularly important in the case of a replanted lateral incisor as the root of the lateral incisor guides the canine into normal arch position.[10] An unerupted canine with a pronounced mesial inclination may be more likely to resorb the replanted lateral than an unerupted canine that is more vertically inclined.

Avulsed teeth frequently undergo pulpal necrosis particularly if the apical formation is complete.[1,8,11] Filling the root canal with calcium hydroxide can inhibit inflammatory resorption and in some cases retard replacement resorption, possibly by limiting the effects of the necrotic remnants in the root canal or by changing the environment to one that promotes hard tissue formation. Endodontic treatment should be instituted within the first two weeks to avoid the risk of abscess formation and to inhibit inflammatory resorption.[1,8,12] Cvek confirmed the value of calcium hydroxide and indicated that early obturation with gutta percha may produce similar results.[13] Martin observed when comparing a number of case histories, that endodontic therapy may exert a favorable influence on the progress of root resorption, in some but not all cases.[9]

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Eruption of tooth-like structure following the exfoliation of natal tooth: report of case

Developmental aberrations

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Shizuo Sobue, DDS, PhD

Natal teeth are defined as teeth that are present in the mouth at birth, and are fairly rare in occurrence, with a frequency of one case in 2,000-3,500 births.[1-5] The teeth involved most often are the lower primary central incisors; supernumerary natal teeth, however, are rare.[1,3,6] The accepted etiology is attributed to a superficial position of the tooth germ, possibly influenced by hereditary factors. Furthermore, the hypomineralization of the tooth crown may have been caused by an insufficient blood supply to the epithelium of the tooth germ.[7-9] Since these teeth lack a root structure and become increasingly hypermobile in all directions, they are usually spontaneously exfoliated or extracted soon after birth. The crown consisted of a hollow calcified cap of enamel and dentin without pulp tissue, rather like a celluloid crown in shape. Regarding exfoliation or extraction, the calcified crown usually separates from the remainder of the tooth germ and the dental papilla may be left in the soft tissue. Usually, the papilla will become necrotic, but occasionally part of the papilla remains vital.

The possibility of continued growth of dental papillae separated from natal teeth has been supported by some investigators.[10-12] The purpose of the present paper is to

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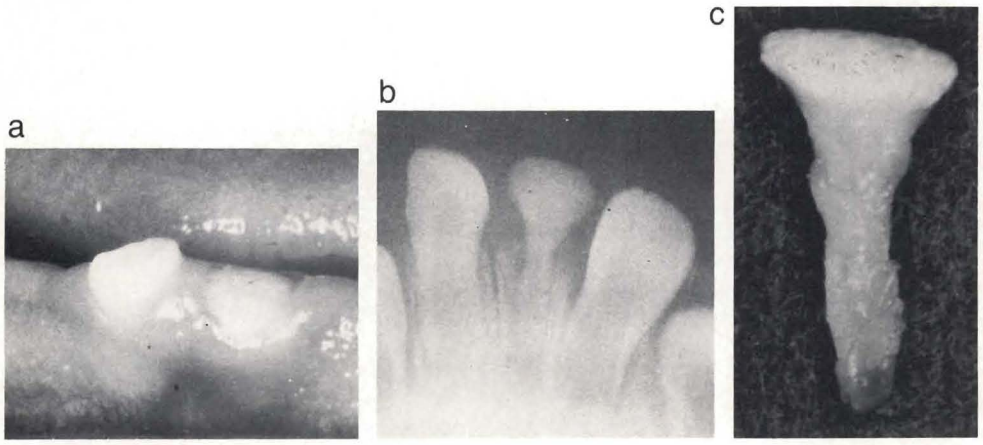


Figures 1a,b,c. (Left to right) Illustrations of the hard-tissue conglomerate in the left lower: clinical photograph, intraoral radiograph, extracted tooth.

report a case in which a tooth-like structure developed and erupted following removal of a natal tooth.

CASE REPORT

The patient was a nine-month-old Japanese boy. He was admitted to Osaka University Hospital and assigned to the Faculty of Dentistry for examination of a hard tissue conglomerate in the left lower central incisor region, which had erupted when he was six months old (Figure 1a). The conglomerate had a bone-like appearance and color, and was smaller in overall dimensions than the right lower primary central incisor, a neonatal tooth that had erupted a few days after birth. The conglomerate was not excessively mobile.

Radiographic examination showed that the hard tissue conglomerate had not only a root but also a pulp chamber (Figure 1b). The root part, however, was poorly developed and constricted in the middle. The radiopacity was somewhat decreased, when compared to that of the right lower central incisor. The tooth-like structure was extracted and subjected to histological examination.

Macroscopically, the extracted substance had a tooth-like appearance composed of a crown and root (Figure 1c). The crown had a bone-like color and structure, and was short vertically. On the other hand, the root had a tooth-like color and structure, and was as long as that of normal lower incisors, but was thinner than usual with an asymmetric contour.

Microscopic examination of the ground section showed that the coronal portion consisted of two distinct hard tissues. The outer part, devoid of enamel, was composed of irregular (poor tubular structure) osteodentin. The inner part, however, exhibited more regularly formed dentin with fewer inclusions (Figures 2a and 2b). The root part was covered by cementum, and dentin was relatively regular and tubular (Figure 2c). Osteodentin was seen, however, at the outer part of the constricted areas (Figure 2d).

The patient had an erupted tooth in the left lower central incisor region at birth, which exfoliated soon after birth. His father had kept the natal tooth in his amulet case and offered it for histological examination. Macroscopically, the natal tooth was a hollow calcified crown. Enamel hypoplasia and brownish discoloration were observed around the incisal edge (Figure 3).

Microscopic examination demonstrated that the hollow crown consisted of the enamel and dentin (Figure 4). The enamel, which covered most of the crown, appeared to be normal in thickness. The dentin seemed to be immature in thickness, since the pulp chamber appeared somewhat larger than normal. The structure of the dentin, however, appeared to be normal, based on the regularity of the dentinal fibrils.

DISCUSSION

Three possibilities are considered in explaining the findings described in this case report. First, the natal tooth might have been primary; whereas, the tooth-like structure that erupted at six months of age might be a normal primary incisor. Second, the latter might be a supernumerary tooth, whereas the exfoliated tooth might have been the normal primary tooth. Finally, the tooth-like structure might have been a developing remnant of the natal tooth; whereas, the natal tooth might have been the normal primary tooth.

The first possibility can be ruled out, because preprimary teeth are described as arising either from an accessory bud of the dental lamina ahead of the primary bud or from the bud of an accessory dental lamina, and

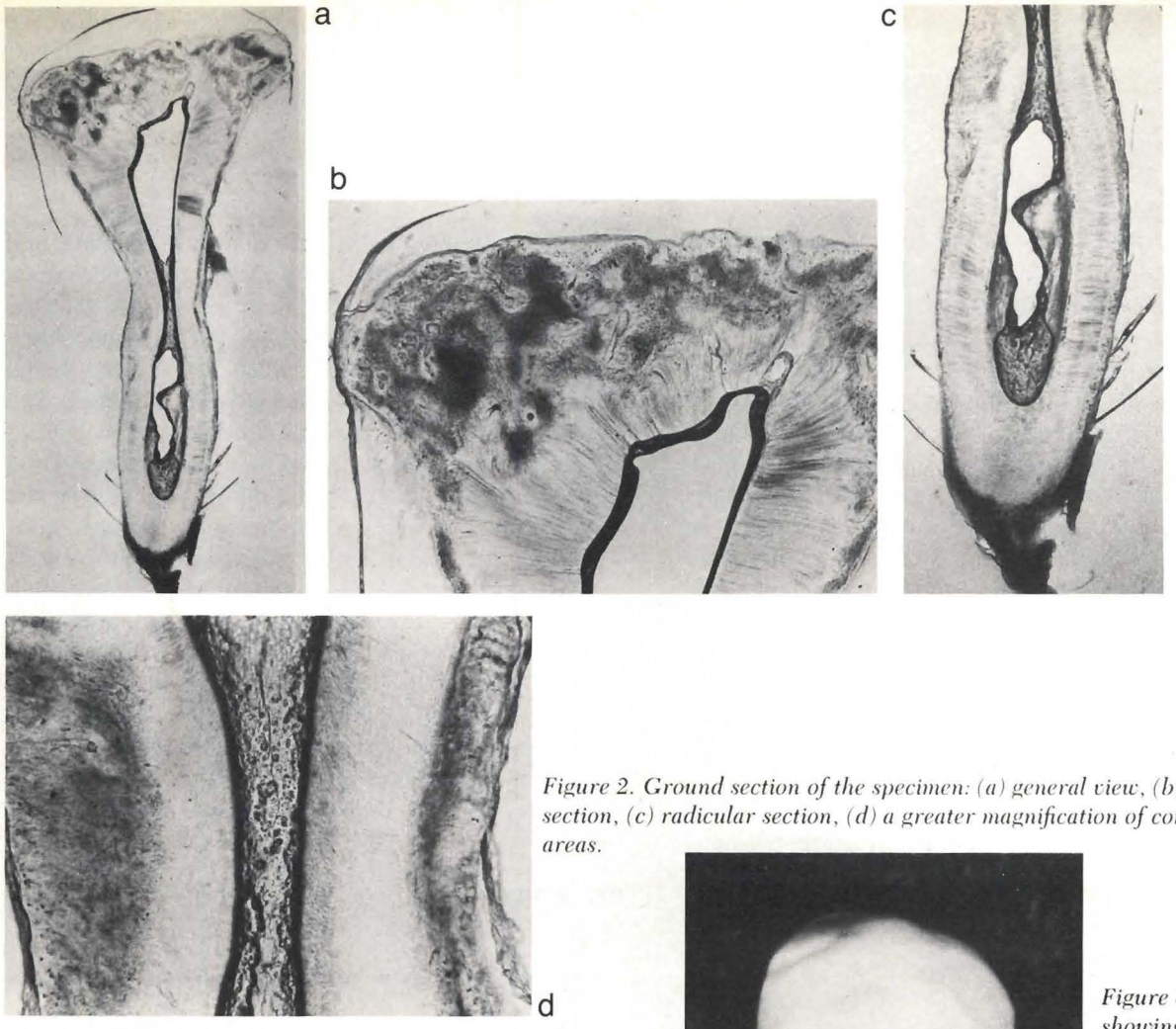


Figure 2. Ground section of the specimen: (a) general view, (b) coronal section, (c) radicular section, (d) a greater magnification of constricted areas.

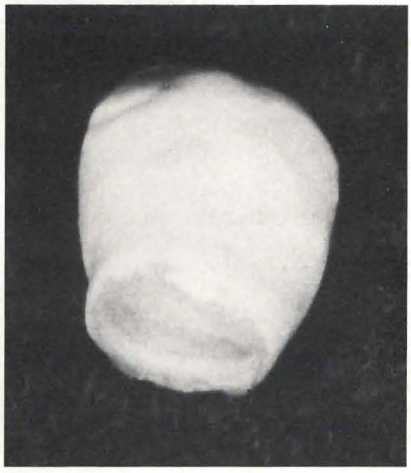


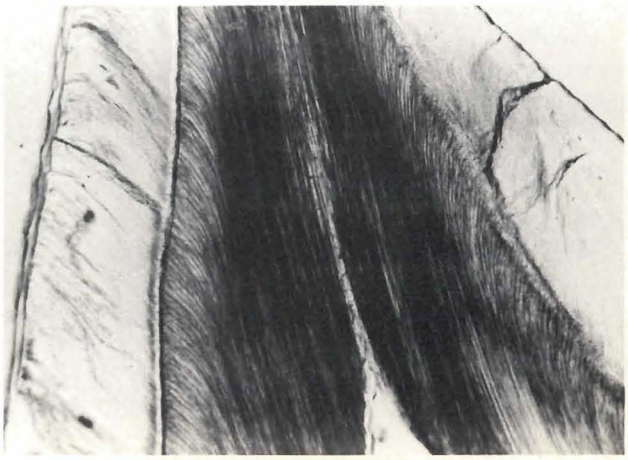
Figure 3. Natal tooth showing the rootless shell crown. Note the enamel hypoplasia and discoloration around the incisor edge.

to be rudimentary in size and structure, composed of thin enamel and dentin of coarse structure. Bearing this in mind, it is considered that preprimary teeth can be easily distinguished from true primary teeth.[13,14] The natal tooth in the present report consisted of a hollow crown of enamel and dentin and was regularly tubular. Macroscopically, the crown was normal in size in all dimensions, while the root was immaturely developed. Also, the tooth-like structure contained no enamel in the coronal hard tissue, and consequently, one is not warranted to identify it as a normal primary incisor. The natal tooth should be considered a primary tooth, and in accordance with the last explanation for the absence of enamel in the tooth-like structure, the second possibility must also be excluded.

The third possibility is extremely rare. When a natal tooth exfoliates, the calcified crown alone is removed. The dental papilla and odontoblast are left in situ. Furthermore, the odontoblast and Hertwig's sheath must remain vital and induce further odontoblastic differentiation and dentin formation.

Ryba and Kramer reported a case in which tumor-like masses had formed thirteen weeks after the removal of a natal tooth. The masses were thought to result from the

Figure 4. Ground section of the natal tooth.



continued growth of dental papillae, since there was well formed dentin with regular tubules, a predentin layer of uniform width, and a layer of odontoblasts in the masses.[10]

Southam reported three cases of continued growth of the dental papilla after the removal of natal teeth. In the first case, a raised, red and ulcerated mass was found four days after dislodgement of a natal tooth. The mass was a retained dental papilla with an acutely inflamed surface and of which one side was partly covered by odontogenic epithelium, consisting of distorted ameloblasts, stellate reticulum, and outer enamel epithelium. In the second case, a swelling with a calcified mass was observed in a baby boy, five months of age, who had no history of tooth eruption in this region. The calcified mass was covered by gingival epithelium and a well-organized tubular dentin structure was present with predentin, odontoblasts, and pulp toward the center of the mass. In the third case, a root-like structure was found eight months after the extraction of a natal tooth. Histological examination showed findings similar to those of the present report, except that the size of the structure was smaller than the one reported here. In particular, the outer part of coronal dentin consisted of irregular dentin and dentin of poor tubular structure, while the inner part exhibited a more regular tubular structure similar to the tooth described in the present case report. Southam concluded that the three cases occurred as a result of the continued development of retained dental papillae from natal teeth, as similar phenomena had been found in experimental growth of animal tooth germs *in vivo* and *in vitro*.[11]

Berman and Silverstone presented a clinical photograph of a tooth-like structure that had erupted after the removal of a natal tooth. They described it as the continued growth of the remnants of the dental papilla, although they did not present any supportive histological evidence.[12]

Usually, the retained dental papilla on the gingiva after extraction of a natal tooth becomes necrotic, due to infection by oral microorganisms and/or external irritation. It is possible, however, that the dental papilla could continue its growth without infection and minimal external irritation, if luxation of the natal tooth and separation of the dental papilla from the tooth crown occurred in the uterus. The findings indicate that the root of the tooth-like structure was partly formed when external irritation began to affect the retained dental papilla, that is, when the natal tooth exfoliated. The natal tooth, however, had a minimal, if any, root structure (Figure 3), suggesting that there was a time interval between the separation of the dental papilla from the natal tooth crown and the exfoliation of the natal tooth. The retained dental papilla must have continued its growth and induced further odontoblast differentiation and dentin formation under germ-free conditions. Although the possibility of continued growth of the retained dental papilla is thought to be extremely rare, it is reasonable to infer that the tooth-like structure described in the present report originated in the remnant of the dental papilla and Hertwig's sheath of the natal tooth, which induced dentin formation as well as root formation.

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Ectopic developing permanent teeth in a five-year-old: report of case

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Robert Steelman, DMD

Multiple dental anomalies involving tooth number and position in otherwise normal children present interesting etiologic and challenging treatment considerations. Permanent teeth, other than third molars, that fail to develop for congenital reasons are missing in 1.6 percent to 9.6 percent of the population. The maxillary lateral incisors and mandibular second premolars are absent most often.[1-3] Supernumerary teeth occur in 1 percent to 3 percent of the population with the maxillary central incisor and mandibular premolar regions affected most often.[1,2] Ectopic eruption is defined as the eruption of teeth in an abnormal direction and, when it occurs, affects the mandibular incisor region 75 percent of the time. In addition, 2 percent to 3 percent of reported cases involve the eruption of a permanent first molar.[1] Transposition is defined as the interchange of positions of adjoining teeth.[2,4,5] The only study to address the prevalence of transposition is by Buenviaje and Rapp, who report an incidence of .08 percent.[2]

CASE REPORT

A five-year-old Hispanic male was seen in the dental clinic for a complete dental examination. His medical record showed a history of iron deficiency anemia, successfully treated with iron supplements, and a functional grade II/VI systolic ejection murmur. There were no known allergies and the child was not being treated for any condition at the time.

Examination revealed no soft-tissue abnormalities. The occlusion was mesial step with anterior spacing in both maxillary and mandibular arches. Extensive caries in the maxillary right primary second molar was observed. The intraoral radiograph of the mandibular right posterior segment (Figure 1) disclosed that the second premolar was missing from the position where it would

Figure 1. Periapical radiograph of mandibular right molar area.

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be normally found; in the same radiograph, however, a tooth was seen developing distal to the distal root of the second primary molar and mesial to the crown of the developing first permanent molar. No other abnormalities were noted radiographically. The dental findings confirmed the asymptomatic condition of the child. There was no known family history of dental anomalies; examination of the parents and sibling, furthermore, revealed no dental abnormalities.

Following restoration of the carious primary molar, a panograph was obtained (Figure 2). Normal development was noted in all areas, except the right mandibular posterior segment. No evidence of morbidity was noted in the area that would account for the observed dental anomalies. Both mandibular right permanent molars appear to be developing distal to their normal positions.

Figure 2. Panograph revealing abnormal development in mandibular right molar area.

DISCUSSION

This case presents questions concerning nomenclature and etiology of dental anomalies similar to the described case. Dorland and Taber define transposition as an exchange of position of objects and ectopic is defined as being located away from a normal position or arising from an abnormal site.[6,7] Gholston states that transposition is a special form of ectopic eruption.[4] Applying these definitions to this report, the developing tooth between the primary second molar and the developing permanent first molar may be a second premolar that migrated into its present position. According to Siegal and Needleman this would represent incomplete transposition, whereby a tooth erupts into a different position without an interchange of teeth.[5] This, however, does not explain the displacement of the first and second permanent molars.

There is also the possibility that the abnormality consists of a congenitally missing second premolar and a supernumerary tooth. Thomas describes supernumerary teeth as additional abnormal (dysmorphic) teeth and supplemental teeth as additional normal (eumorphic) teeth. He also states that additional mandibular premolars are usually eumorphic, that they may arise from accessory dental laminae located buccal to the primary molars, and may represent a partial third dentition when the development of the accessory tooth is far behind the normal premolars.[3] In this case, the position of the tooth between the primary and permanent molars and the lack of resorption of the distal root of the primary molar suggest that the tooth bud initiated in this position directly off of the dental lamina distal to the second primary molar with the first and second permanent molars following in sequence. There appears to be no evidence of migration. The tooth under consideration appears to be a normally developing eumorphic premolar. This case may represent an ectopically developing second premolar, first permanent molar, and second premanent molar or incomplete transposition of the second premolar.

Treatment will consist of maintaining the lower right second primary molar and allowing normal eruption of the surrounding premanent dentition. At an appropriate stage of development, the second primary molar will be extracted and the permanent teeth guided into proper occlusion.

CONCLUSION

A case of ectopic growth of the developing permanent mandibular right second premolar and first and second molars in a five-year-old child has been presented. The nomenclature and nature of various dental anomalies were discussed to determine the etiology of the situation. A conservative treatment plan was presented.

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Multiple agenesis in two siblings: report of case

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Because parents are better informed today about the importance of dental health, dentists see more children for routine checkups. Nevertheless, dental caries, infections, and developmental problems are most frequently responsible for children's visits to a dentist. The absence of one or more teeth is also a frequent reason for seeking a dentist's advice.

Multiple agenesis can be defined as a congenital absence of several teeth; it is also referred to as partial anodontia or hypodontia.[1] A radiographic examination made at the proper age is necessary for a positive diagnosis of multiple agenesis.[2] This aberration is often encountered in conditions such as ectodermal dysplasia and lipoproteinosis.[1] It is only rarely seen in children who have no other abnormalities. It is estimated that the prevalence of missing teeth is between 3 percent and 7 percent of the population.[3] The teeth most frequently missing are the third molars, the mandibular second premolars, and the maxillary lateral incisors. Canines and first premolars are rarely missing.[4-6] Jorgenson (1980) summarized the possible causative factors of hypodontia:

- ☐ Physical disruption of the dental lamina, which may cause obliteration of certain tooth buds.
- ☐ Limited space in the dental arches.
- ☐ Metabolic imbalance, where a necessary element of odontogenesis is absent.[1]

Family patterns of hypodontia have been reported, and most authors consider hypodontia as genetically heterogeneous.

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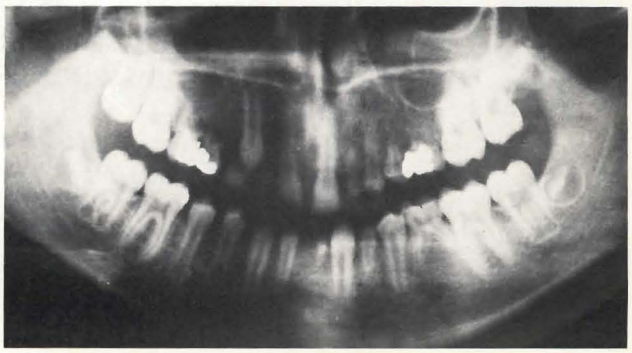
CASE REPORT

Four siblings were seen for dental checkups, which included clinical examinations and panorex and periapical radiographs. The children were from a Caucasian French family. Their ages were: Boy G, three years; Girl B, six years, five months; boy Q, ten years; boy E, thirteen years, five months.

The examinations revealed multiple agenesis in B and E, while Q had all of his teeth, and G had all the teeth normally visible in radiographs for his age. The parents were carefully questioned about their familial predecessors' dental histories, but no evidence of hypodontia was uncovered. Furthermore, no medical problems were encountered during the pregnancies and deliveries of the two children with the missing teeth. The family had

Figure 1. Sibling E.



always resided in France, in areas where pediatric follow-up was readily available. Also, no apparent nutritional problems arose during the first two years of their lives.

Both B and E had eleven permanent teeth missing. Examination revealed a remarkable resemblance in the dentitions of the two children (Figures 1, 2). Except for the presence of the maxillary left canine in E and the presence of the lower right lateral incisor in B, the dentitions were alike. Such evidence could support the role of a genetic factor in multiple agenesis.

Note should be also taken of which teeth are missing:

- ☐ The maxillary lateral incisors and the mandibular right canine are missing; these teeth are frequently missing.
- ☐ The maxillary premolars are also absent; these teeth are less frequently missing in the general population.
- ☐ The mandibular incisors and maxillary canines are missing, which are relatively rare occurrences.

The treatment plans for the two children differed:

E: Extractions of some primary teeth, restorations of the carious teeth, a cosmetic anterior space maintainer in the maxillary right quadrant, orthodontic treatment in the lower right quadrant in order to reposition the teeth, followed by placing a space maintainer.

B: Extractions of two primary teeth, and preventive and restorative treatments in the remaining teeth.

Both children received fluoride treatments, and they were seen every three months for routine check-ups.

Multiple agenesis is a dental condition occasionally seen in children with certain syndromes, and more rarely in healthy children. In this family, two of the four children were afflicted with multiple agenesis, and with very similar dentitions.

Figure 2. Sibling B.

Early examination, including adequate radiographs, is necessary to evaluate properly this dental condition.[5,7] Preventive and early restorative treatments should be provided where necessary.

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SAFETY SEATS

There are about 158 children alive today because child safety seats were in widespread use during 1984, the National Highway Traffic Safety Administration estimated in a recent report.

As all 50 states have implemented laws requiring the use of the seats, child fatalities in autos have dropped from 694 in 1979 to 551 in 1984.

The Nation's Health,
May-June, 1986

Case reports

Angiography, gingival hyperplasia and Sturge-Weber syndrome: report of case

Stephen Wilson, MA, DMD, PhD
John M. Venzel, DMD
Richard Miller, DDS, PhD

Encephalotrigeminal angiomatosis, or more commonly known as Sturge-Weber syndrome, is a condition which may be variably characterized by the following findings: a facial nevus (hemangioma), leptomeningeal angiomas, convulsions, calcifications on the side of the brain ipsilateral to the facial nevus, ocular disorders, obesity, mental retardation, and oral involvement.[1-5] The vascular anomalies are described as hamartomas and are not usually associated with neoplastic processes.[5] Although it is believed that the maldevelopment of the vascularity occurs in the first trimester of intrauterine life, the etiology for the asymmetrical anomaly remains unknown.[6,7] The hemangiomas may involve any or all of the major distributions of the branches of the trigeminal nerve. The extent of intraoral involvement of the hemangiomas can vary considerably; the lips, cheeks, palate, gingiva, tongue, and floor of the mouth, however, can be affected.[5,7-9] One case report indicated accelerated eruptive and growth stages of teeth associated with an overlying gingival hemangioma, and it was suggested that the etiology for this phenomenon may be related to increased metabolic

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activity in the area.[1]

There are associated meningeal hemangiomas in the brain of the individuals with Sturge-Weber syndrome, and a fairly consistent related finding is calcification and atrophy of adjacent brain tissue. The atrophy is due to sluggish blood flow in malformed vessels, and this results in an anoxic injury to the tissue.[10] Consequently, many of these patients have convulsive episodes, and they are often placed on Dilantin for anticonvulsive therapy. They may develop gingival hyperplasias secondarily to the Dilantin hyperplasia or as a result of underlying hemangiomas.

The gingival hyperplasias may become excessive and decisions for their removal may need to be addressed. A differential diagnosis between gingival hyperplasias and hemangiomas must be considered carefully in the syndrome, as a severe hemorrhagic episode may conceivably occur in the indiscreet removal of the latter.[2] Angiography or the process of identifying the anatomic distribution of blood vessels with a radiopaque matter and radiography may be a valuable diagnostic tool in distinguishing between hemangiomas and other tissues. The following is a case report in which the use of angiography was used to aid in the differential diagnosis of a hyperplastic gingival lesion in a Sturge-Weber patient.

CASE REPORT

The patient is a nine-year-old black male (Figure 1), who was diagnosed at birth to have Sturge-Weber syndrome with subsequent complex seizure disorders, left hemiparesis, and glaucoma, secondary to Sturge-Weber syndrome. The patient has a brother and lives with his mother and grandmother. No other members of the family are affected by the disorder. His medical history reveals that he was a full-term baby (7 lb. 11 oz.) and the product of a normal pregnancy and delivery. He had congenital glaucoma of the right eye and a classic port wine stain (nevus) involving the entire right hemifacial area. Shortly after birth, he developed a seizure disorder and was admitted on several occasions for status epilepticus; but in recent years, this condition has been adequately controlled with Dilantin (200 mg/day) and Clonopin (10 mg/day). Presently, his immunizations are current and he has no known allergies to medications. His diet consists of regular food, although his intake of food is poor. Developmentally, the patient is grossly delayed and unable to speak, but is ambulatory. The child receives special educational training.

A physical examination revealed a small-for-age, debilitated black male in no acute respiratory distress. His vital signs were within normal limits (axillary temperature, 98°F; heart rate, 124; blood pressure, 100/68; and respiration, 28/min.). The tympanic membranes were clear, the right side of the face and the right eye were grossly enlarged. The eye was diffusely edematous, with an indistinguishable disc. The left eye and disc appeared clear. The nose and throat were clear, the neck was supple without lymphadenopathy. The chest was clear and the heart had a normal rate and rhythm without evidence of an appreciable murmur. The abdomen was soft and nontender. There was a marked contracture of the upper left extremity, and the other limbs appeared grossly normal. Although there was no clonus or other abnormal reflexes, there were hypertonicity of the left upper extremity and weakness, especially of the left side, on both upper extremities.

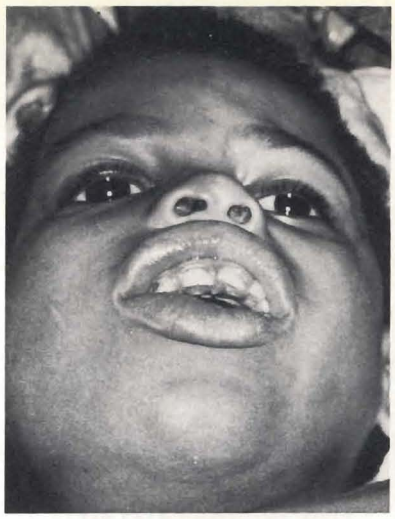

Figure 1. This is a photograph of the individual with Sturge-Weber syndrome. Note the classic port wine stain involving the entire right side of the face. Some hypertrophy of the tissues is noticeable.

In the oral cavity, the only caries lesion was on the occlusal surface of the right maxillary first permanent molar. The intraoral hemangioma extended from the palate to the mandibular vestibule on the right side, but did not include the tongue and floor of the mouth. There was moderate generalized gingivitis in both arches. A large (3 cm x 2 cm) red pedunculated mass of hyperplastic tissue was noted to the buccal of the right mandibular first premolar, first permanent molar and the second primary molar. Palpation of the tissue revealed a relatively firm, but nonblanching mass suggestive of pyogenic granuloma. Full-mouth radiographs revealed bone loss around the mandibular second primary and first permanent molars, and there was class III and II mobility, respectively. The parent indicated that the lesion had grown recently, and it was evident that occlusal trauma to the tissue would soon occur, if not removed.

The decision was made to investigate the possibility of excising the lesion; to determine, however, the extent, if any, of hemangiomatous involvement of the lesion, an arteriogram was ordered. A percutaneous puncture of the right femoral artery was done. The catheter was

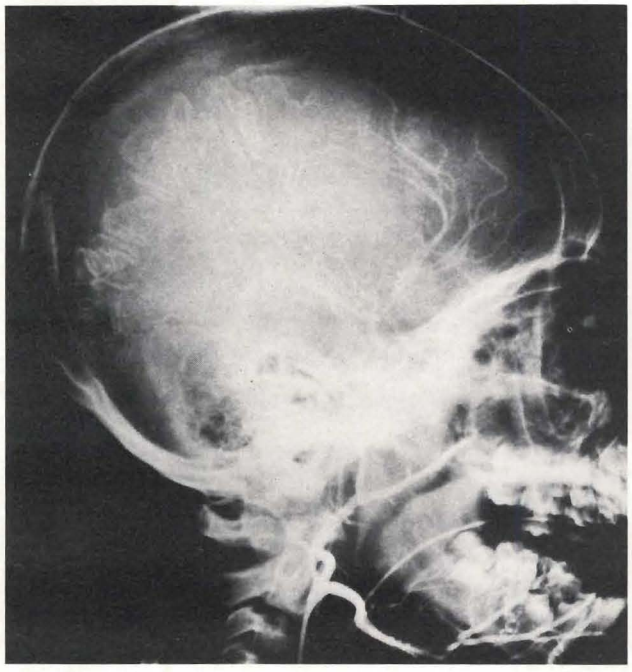

Figure 2. Lateral head roentgenogram of the patient. The iodinated contrast material can be seen in the right lingual artery and its branches. Also note the classical intracranial calcifications, which resemble railroad tracks.

advanced under fluoroscopic control to a supraselective catherization of the right lingual artery. Lateral and anteroposterior radiographs were obtained following the injection of an iodinated contrast material into the vessel. The results showed a relatively avascular mass in the right gingivobuccal sulcus with extensive intracranial calcifications resembling railroad tracks, which is characteristic of the Sturge-Weber syndrome (Figure 2).

While the patient was under general anesthesia, the occlusal caries on the right maxillary first permanent molar was restored and the lesion removed. There was minimal hemorrhage, which was controlled by pressure and a suture (4-0 chromic gut). The rest of the dentition was scaled and the oral cavity carefully inspected. The excised tissue was placed in formalin and sent to the Pathology Laboratory for analysis. The results of the pathologic examination (Figure 3) revealed a lesion consistent with the diagnosis of pyogenic granuloma. The parent was given oral hygiene instructions and seen one week postoperatively. There were no complications and the tissue was healing normally, so the patient was placed on a three-month recall.

DISCUSSION

In the description of this Sturge-Weber patient, the classic signs and symptoms of a facial nevus, leptomeningeal angiomas with tram-line calcifications of the ipsilateral brain, epileptic convulsions, ipsilateral ocular involvement, contralateral hemiplegia, mental retardation, and oral mucosal and gingival changes were present. In addition, there was no family history suggestive of a hereditary factor in this case.

Figure 3. Photomicrograph of the excised lesion. The histopathologic interpretation was that of a pyogenic granuloma.

Although there have been previous descriptions of gingival involvement in this syndrome, a search of the literature does not reveal any studies in which angiograms were used as part of the patient work-up prior to surgical removal of a hyperplastic lesion ipsilateral to the hemangiomatous involvement. Royle *et al* have reported the use of a carotid angiogram prior to the use of a sclerosing agent in the treatment of a Sturge-Weber patient.[3] Angiograms may be indicated in similar cases whenever there is a questionable lesion that could be surgically removed. In this case, a distinction between a suspected pyogenic granuloma and a hemangioma, both of which may clinically present as a pedunculated soft tissue mass was desired.[9] The angiogram indicated that there was a minimal vascular involvement of the lesion, which was confirmed by a small amount of bleeding following surgical removal of the lesion.

Recurrence of gingival hemangiomatous growth following surgical removal has been reported in Sturge-Weber patients.[7,11] A positive pressure splint was reported to be effective in minimizing the extent of regrowth of tissue.[12] In addition, strong attention must be given to enhancing the effectiveness of daily oral hygiene programs at home as the local irritants must be kept to a minimum.[11] The etiology for the recurrence remains unknown; Gyarmati, however, reported that a rapidly developing hemangioma of the gingiva occurred following the removal of brain tissue in a Sturge-Weber patient. He postulated that there exists an irregular vascular development of the head which may be stimulated to increase in growth following appropriate stimulation. This is an interesting hypothesis, and it is possible that angiography may become an important tool in the evolution of such a hypothesis. Future research in this area seems warranted.

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COCAINE BABIES

The "devastating" effects of cocaine on the developing fetus are creating a generation of children with an abnormally high incidence of "severe" physical and emotional problems, according to researchers who are reporting some of the first long-term studies of such children.

"I'm afraid the long-term effects are going to be devastating," said Judy Howard, MD, medical director of the anti-child-abuse team at the University of California at Los Angeles. "I can see [cocaine babies] growing into children with learning difficulties and severe impairments in motor movement, including such simple activities as eating and dressing."

Her fears are based on what she has learned by following the development of children born to drug-using mothers. A group was followed for two years, and Dr. Howard found that 90 percent of these infants follow "a fairly typical behavior pattern," which includes extreme irritability, tremors, sensitivity to sounds, and various personal-social defects.

According to Arnold Washton, PhD, director of addiction research and treatment at Regent Hospital in New York, part of the problem is the "erroneous assumption" that the drug is essentially benign. On the contrary, studies at Northwestern Memorial Hospital, Chicago, suggest that cocaine abuse during pregnancy may cause physical and behavioral problems worse than those seen in babies undergoing heroin withdrawal.

Moreover, while some drugs are declining in popularity, cocaine use is still climbing.

The Nation's Health, May-June 1986.
As reported by Rick McGuire for
the International Medical Tribune
Syndicate.

Hallermann-Streiff syndrome: report of case

Arnold J. Malerman, DDS
Manuel M. Album, DDS

Hallermann-Streiff (oculomandibulocephaly) is a symmetric second branchial arch defect resulting in a syndrome whose main features consist of:

- ☐ Dyscephaly (abnormal head) with bird facies and hypoplastic mandible.
- ☐ Congenital cataracts.
- ☐ Proportionate nanism (dwarfism).
- ☐ Microphthalmia (small eyeballs).
- ☐ Hypotrichosis (congenital lack of hair).
- ☐ Dental anomalies.
- ☐ Cutaneous atrophy primarily limited to the face and/or scalp.
- ☐ Brachycephaly (shortness of the head) with frontal and parietal bossing.
- ☐ Open sutures and fontanelles.
- ☐ High arched palatal vault.
- ☐ Nystagmus (oscillatory eyeball movement).[1-7]

Hallermann in 1948 and Streiff in 1950 reported cases with adults showing some of the above features. Francois in 1958 collected twenty-two cases and suggested a new clinical entity known as Hallermann-Streiff-Francois syndrome or dyscephalia oculo-mandibular-facialis.[8] Francois considered the initial seven signs of features as positive and essential for the diagnosis.

To date, approximately sixty-five cases have been reported in the literature. The difficulty in evaluating these cases is that there is not a specific clinical or laboratory test enabling these patients to be characterized as a group. Most reports of the syndrome are found in the ophthalmology literature, because of the eye abnormalities. As with many such syndromes, reported cases frequently do not demonstrate all of the characteristics.[9]

The etiology of Hallermann-Streiff is poorly understood. Chromosomal studies have been essentially normal. There is no sex predilection. The possibility arises that a single mutant gene is responsible, although the concept of chromosomal aberration has been alluded to in the literature.[10-14] The causative episode seems to occur during the first trimester, during the period of maximal development of the lenses and the facial bones.

Forty-eight percent of the reported cases show dental anomalies. Fifty-eight percent show dyscephaly with bird-like face similar to progeria (Hutchinson-Gilford syndrome). Cataracts, skin atrophy, hypotrichosis, microphthalmia, and nanism all range from 42 percent to 55 percent of the cases reported.[15] Although the majority of the signs of Hallermann-Streiff are present at birth, some of the cases are not diagnosed until later, because the C.N.S. symptoms, including mental deficiency, are infrequent. At birth, the cosmetic problem is often the only complaint. Patients visit the ophthalmologist because of visual impairment from congenital cataracts.[13,15] Other infrequent ophthalmologic signs and symptoms, such as strabismus, blue sclera, choroid atrophy and antimongoloid slanting may initially be overlooked.

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Figure 1. Patient E.H. pretreatment photographs age 10 years, 9 months.

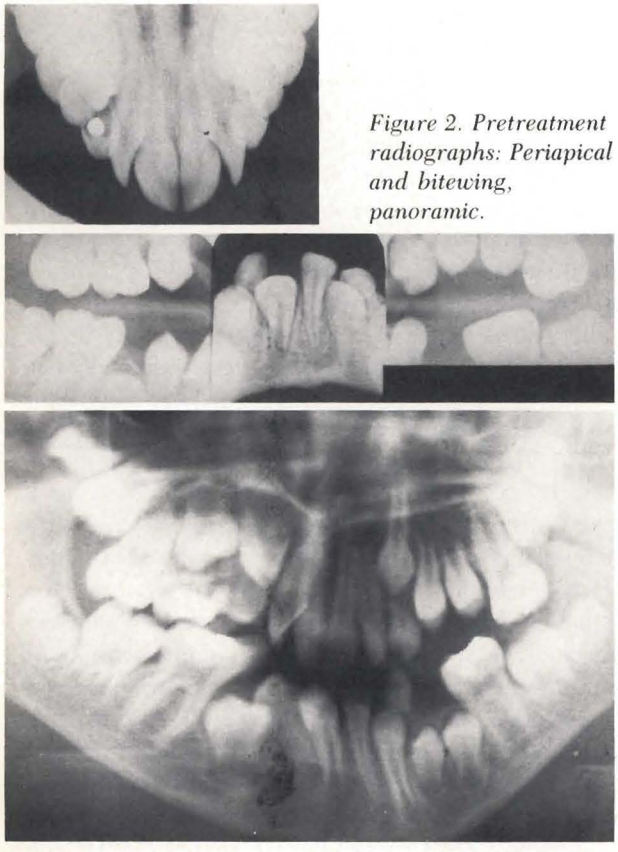

Figure 2. Pretreatment radiographs: Periapical and bitewing, panoramic.

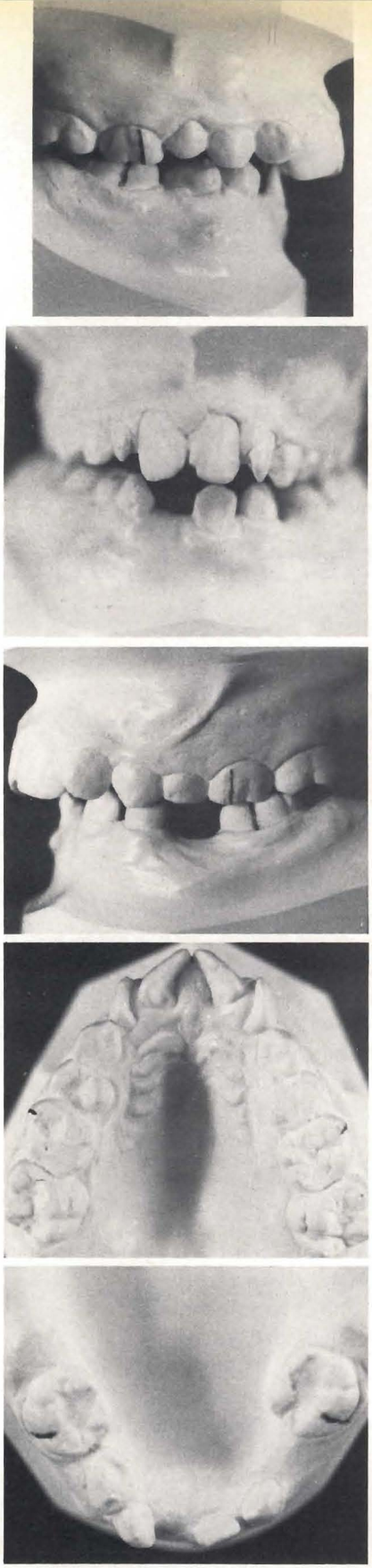

Figure 3. Pretreatment study models: Right lateral, frontal, left lateral, maxillary occlusal, mandibular occlusal.

Hallermann-Streiff should be considered a congenital disorder consisting mainly of developmental anomalies of the skull and facial bones. Skeletally, the mandibular rami are often hypoplastic with missing condyles or anterior condylar displacement; many times this is associated with anterior displacement of the temporomandibular joint. The palatal vault is often high and narrow. Malar processes are hypoplastic, and a shallow sella

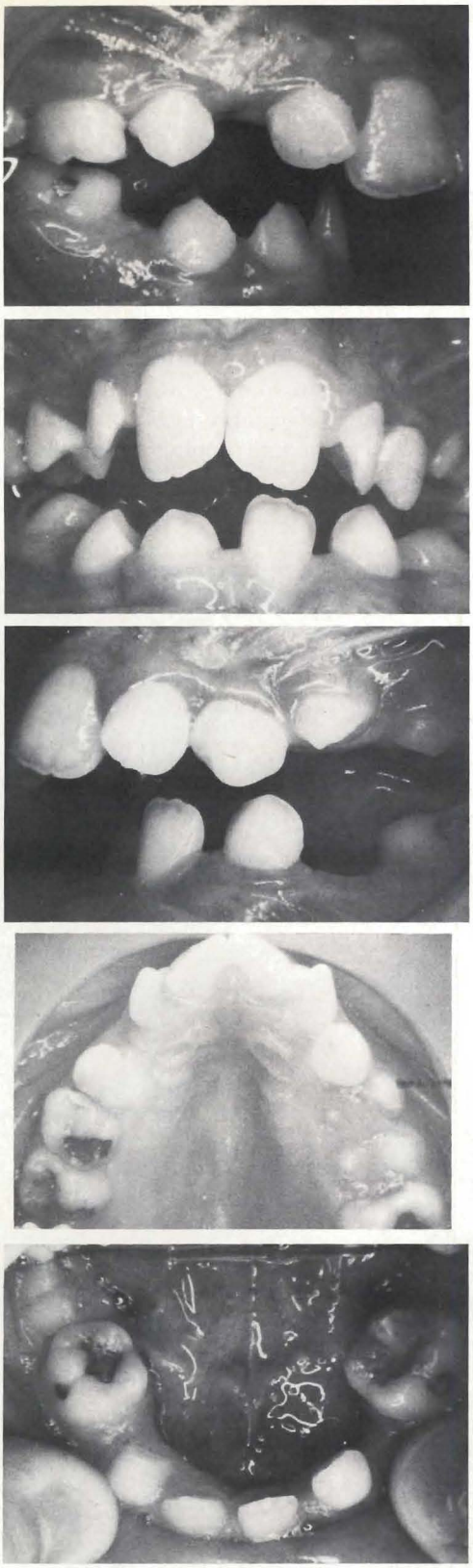

Figure 4. Pretreatment occlusion: Right lateral, frontal, left lateral, maxillary occlusal, mandibular occlusal.

turcica is an occasional finding. The fontanelles and sutures may be open. Other bone disorders, such as syndactyly, lordosis and scoliosis have been reported.

Hypodontia is common, as is malocclusion. Enamel hypoplasia is a frequent finding.

CASE HISTORY

The patient, E.H., was a ten-year-old Caucasian female, when she initially presented for dental care (Figure 1). She was in need of restorative treatment as well as orthodontic evaluation. Physically, she was characteristically an ectomorphic somatotype, prepubertal, in generally good health, and demonstrated a late transitional dentition with an Angle Class II, Division 1, Orthogonal Group 7, dental and skeletal malocclusion in the sagittovertical dimensions (Figures 2,3,4).

Following the restorative treatment, evaluation was carried out for orthodontic care. Full diagnostic records revealed the patient's skeletal pattern to be Class II, with the mandible retrusive in relation to the maxilla and to cranial base (ANB-8°). The mandible was hypoplastic with short rami. The condyles were displaced anteriorly, and the mandible was rotated downward and backward, producing a skeletal anterior open bite and extremely steep mandibular (GoGn-SN = 47°) and occlusal (Occ-SN = 30°) planes. The palatal vault was high and narrow, and the maxilla was "V" shaped with 9mm horizontal overjet. The mandibular right central incisor and both mandibular lateral incisors were congenitally missing. The molar relationship was Class III due to mesial migration of the mandibular molars. The malpositions of the mandibular molars caused impaction of the mandibular premolars. The mandibular incisor relationship was recumbent and retrusive. Tongue thrust, perioral grimace and mentalis habit were a constant, and the patient had a lower-lip biting habit. Only three primary teeth had yet to exfoliate. The four maxillary incisors were extremely rotated. Additionally, there were more than 8mm of crowding in the maxillary arch.

As many of the permanent teeth were only partially formed, a mandibular lingual arch was fabricated to prevent further mesial migration of the mandibular molars. The patient was observed for 1.5 years, until the majority of her permanent teeth erupted, and exfoliation of primary teeth was complete.

Just prior to beginning orthodontic treatment, the maxillary first premolars were removed. Extraction of the maxillary first premolars created better harmony between the amount of tooth material in the maxillary arch compared to that in the mandibular arch, where three teeth were congenitally missing. Additionally, removal of the maxillary first premolars alleviated the problem of the maxillary arch length insufficiency, and

allowed the room to correct the patient's severe horizontal overjet.

Full corrective orthodontic appliances were placed in February of 1982 (Figure 5) and both arches were leveled and aligned, eliminating all rotations and vertical discrepancies. Space was opened in the mandibular arch, by advancing the lower anterior segment and moving the mandibular molars distally, to allow the impacted mandibular premolars to erupt. The horizontal overjet and the anterior open bite were significantly reduced, and the molar relationship corrected to Class I. The maxillary extraction space was completely closed. The one remaining mandibular incisor was placed in the mandibular midline, with symmetric arch alignment on either side, allowing for good buccal interdigitation (Figure 6). Total time in full corrective orthodontic appliances was thirty-two months (Figures 7-11). As oral hygiene was somewhat compromised because of the patient's visual impairment, prophylaxis was done frequently during the course of her orthodontic treatment,

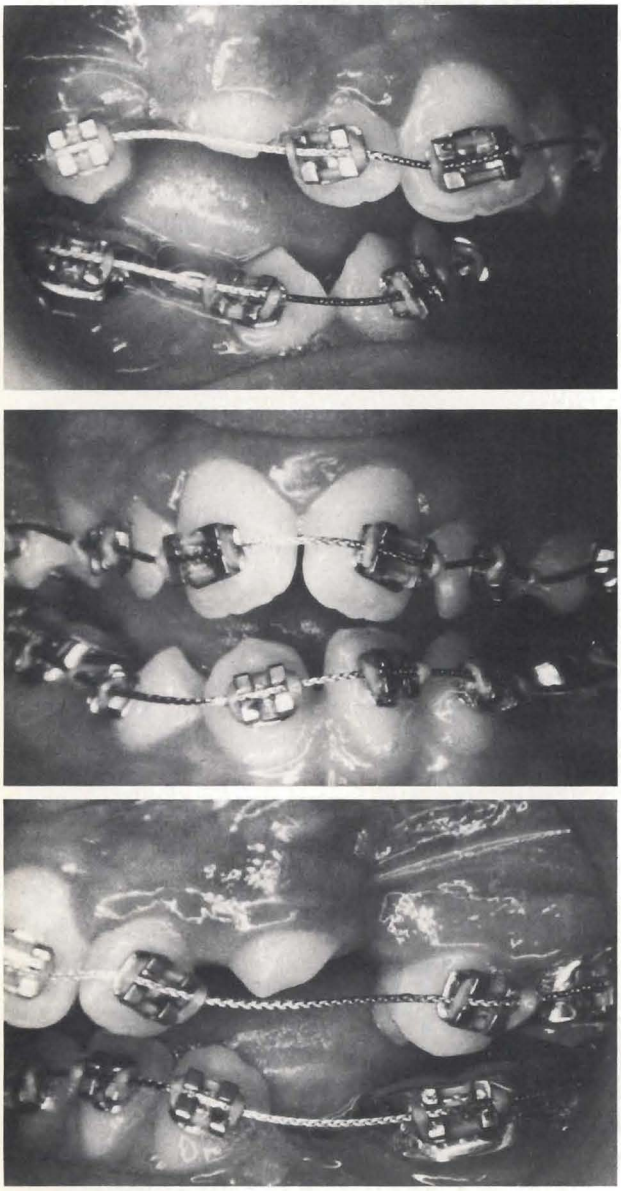

Figure 5. Initial orthodontic appliances, age 12 years, 3 months: Right lateral, frontal, left lateral.

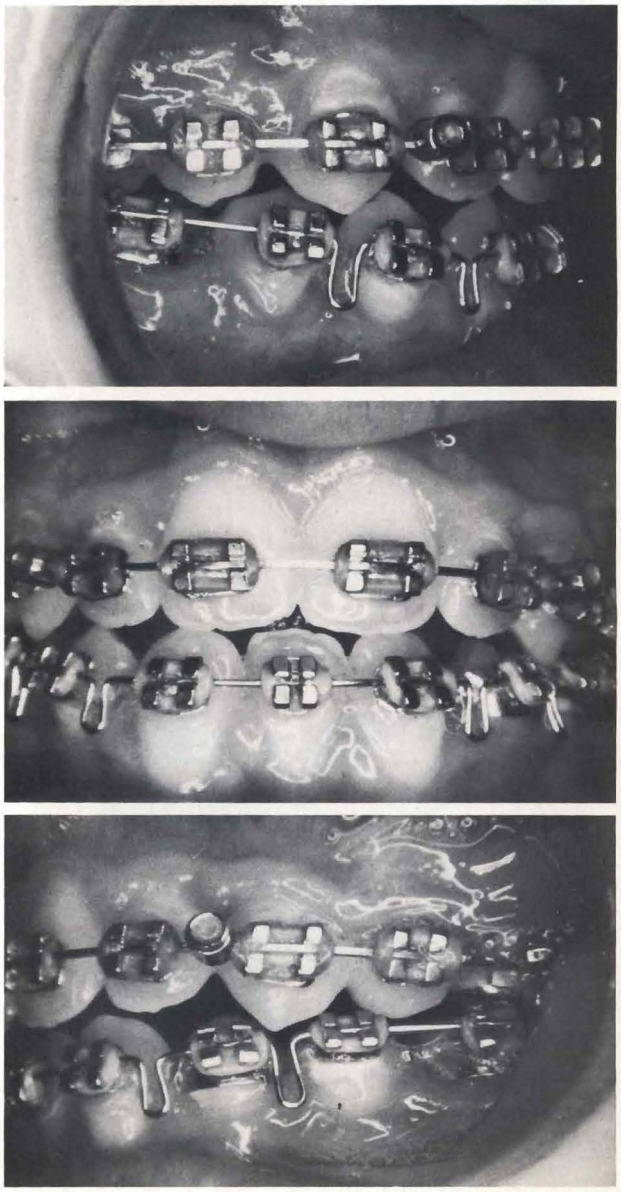

Figure 6. Final orthodontic appliances, age 14 years, 11 months: Right lateral, frontal, left lateral.

Figure 7. Patient E.H. posttreatment photographs, age 15 years, 1 month.

with appointments for prophylaxis scheduled at four-month intervals.

DISCUSSION

Hallermann-Streiff syndrome is a second branchial arch defect with significant ophthalmologic, dental and craniofacial findings. These anomalies provide a difficult management and treatment situation for both the restorative dentist and the orthodontist. Orthodontic

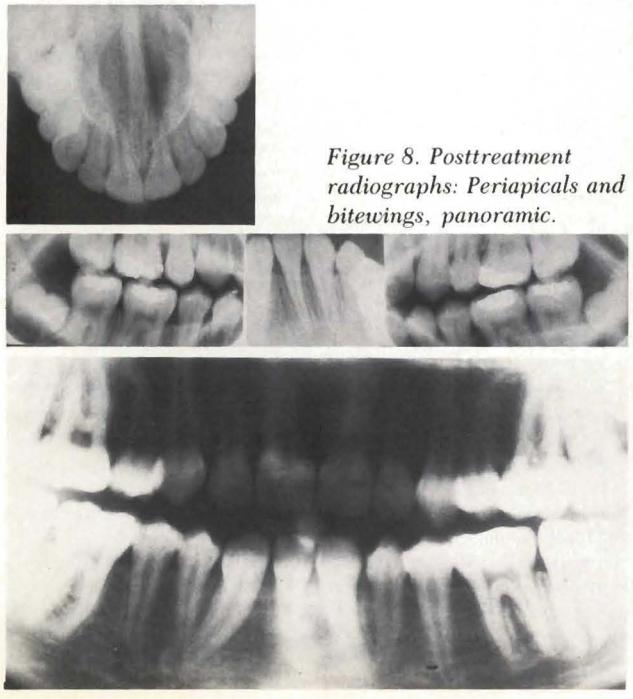

Figure 8. Posttreatment radiographs: Periapicals and bitewings, panoramic.

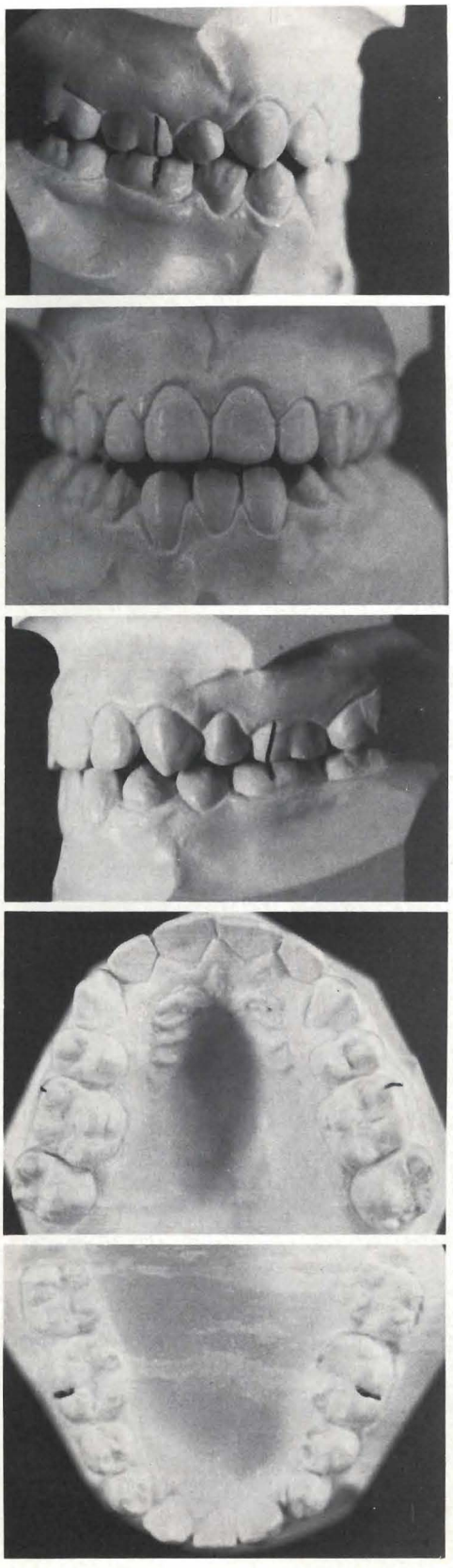

Figure 9. Posttreatment study models: Right lateral, frontal, left lateral, maxillary occlusal, mandibular occlusal.

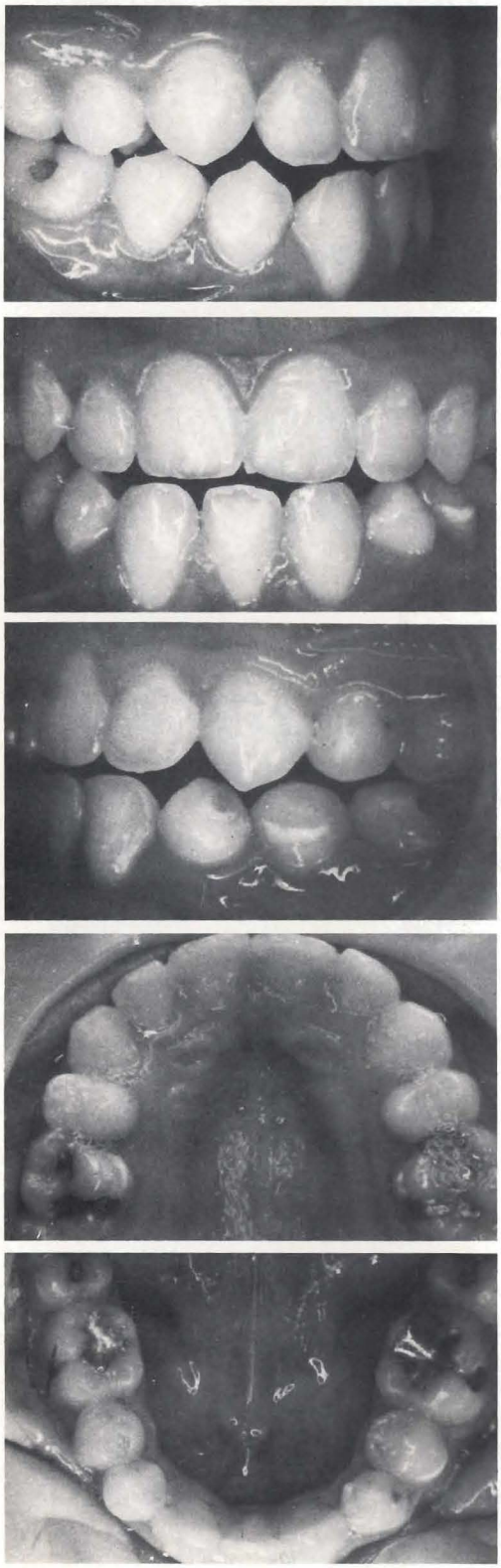

Figure 10. Posttreatment occlusion: Right lateral, frontal, left lateral, maxillary occlusal, mandibular occlusal.

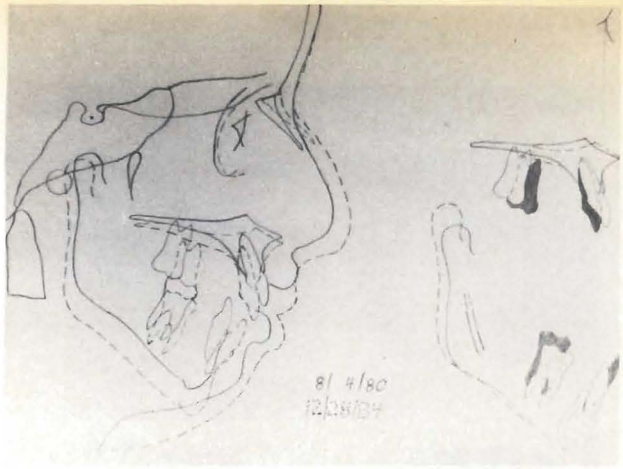

Figure 11. Cephalometric superimpositions: Solid line 11/3/69, age 10 years, 9 months; dotted line 12/28/84, age 15 years, 1 month.

treatment planning is affected by dental anomalies as well as the craniofacial aberrations. Because of visual impairment, the dentist or the patient's parents must often assume responsibility for the routine tasks that patients are usually called upon to accomplish. The dental and facial improvement that can be accomplished, in a well-controlled treatment program, is often dramatic.

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Dental management of a child with familial dysautonomia

Burton L. Nussbaum, DDS

Familial dysautonomia is a hereditary sensory neuropathy that involves sensory, motor, and central components of the nervous system.[1] It is also known as Riley-Day syndrome.[2,3] Pain and temperature sensation are decreased and there is marked automatic dysfunction.[4-6] Signs of the disorder present from birth and neurological function slowly deteriorates with age.[5]

Earliest signs include feeding difficulties, aspiration pneumonias, and possible lung abscesses. There is a gastroesophageal reflux that further increases the risk of aspiration. Forty percent of the patients have diaphoresis.[4,7,8] Vomiting crises are associated with irritability, negativistic behavior, hypertension, tachycardia, and blotchy erythema.[4] Another problem of familial dysautonomia is the abnormal response to hypoxic and hypercarbic states.[9,10] Diving and underwater swimming must be avoided. Agitated patients can hold their breath without discomfort to cause cyanosis, syncope, decerebrate posturing, and seizures.[24] Other abnormalities include lack of overflow tears, supersensitivity of the pupil to autonomic drugs, postural hypotension, skin blotching, and inappropriate hyperhidrosis.[1] Emotional crying does not cause overflow tears. Corneal deepithelialization, ulceration, and scarring with opacification often occcur.[11,12] Profuse sweating can be caused by excitement. The extremities may intermittently become cold, red, and mottled. Inappropriate response to temperatures can result in either hypothermia or hyperthermia.[1] Sensory involvement is most prominent in temperature discrimination.[1,5] Decreased pain sensation is first seen by blunted responses to skin trauma, but visceral pain sensations are left intact.[1,5] There are absent deep tendon reflexes.[1] By sixteen years of age, 95 percent of these patients have scoliosis.[13] These patients usually have a tongue thrust. Average intelligence, poor somatic growth, and delayed puberty are commonly seen.[1,14] The disease process cannot be arrested and supportive therapy is directed toward specific problems. Patients are hypersensitive to sympathomimetic and parasympathomimetic drugs. Small doses can cause hypertension, hypotension, tachycardia, and bradycardia.[1,4] This has very serious implications in the administration of general and local anesthetics. Familial dysautonomia is autosomal recessive and appears largely in Ashkenazi Jews, but cases in non-Jews have been reported.[6,15-17]

DENTAL CHARACTERISTICS

Orofacial features include a tendency to facial concavity in the child and a tendency to convexity in the adult. Increased salivation has been noted. Fungiform papillae are absent from the tongue. Crowded teeth and malocclusion are characteristic. There is a low DMF score. Because of the decreased pain sensations, there is poor response to electrical pulp tests. Frontal bulging has been noted and the face is very small.[18] Kaufman, Ka-

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Figure 1. Sore on elbow. Note scaly skin and poor healing. Similar lesions, or scars appeared on other parts of the body: knees, forehead, and fingers.

diri, and Galidi noted a case in 1982 where a child with familial dysautonomia was treated for acute dental pain under nitrous oxide-oxygen anesthesia. He had a cardiac arrest during the procedure, but was resuscitated.[16] In November 1969, Reitman reported a case of successful orthodontic treatment for a crowded Class II division I malocclusion.[19]

CASE REPORT

On December 17, 1983, patient M.P., male, age eleven years and four months, came to this office for dental care. He was abnormally small at birth, and his growth has remained retarded. He was hypotonic, causing developmental milestones to be delayed. Because of multiple seizures, he was on Dilantin. Feeding problems were noted due to decreased oral sensations. Vomiting was noted in infancy, but this has subsided with age. He also had alternating diarrhea, constipation, and eczema, possibly due to food allergies. He has had a dislocated hip and multiple slow healing bone and skin problems. Scoliosis was noted at three years of age. He is not toilet trained and has fecal soiling. Vision is limited due to scars on his anesthetic corneas. Hearing is impaired due to recurrent otitis media. M.P. is of Irish descent.

A recent physical examination noted multiple items. First, he has warm and dry skin with multiple sores. One area on the knee has been present for more than two years. He has a triangular head with a broad forehead and a low hairline. His eyes revealed multiple corneal scars. M.P.'s mouth showed grooved teeth, a high palate, and no fungiform papilla on the tongue. He is completely indifferent to pain, including the soles of his feet and neck. He had no response to testicular compression, Achilles pinch, or sternal rub. Also, not present are tendon reflexes, superficial reflexes, or plantar reflexes. With a histamine injection, there was no axon flare or pain, and miosis caused by pilocarpine. According to his mother, he is hyperactive and a severe behavior problem.

The first visit on December 17, 1983 consisted of an examination, ten radiographs, oral hygiene instructions, and consultation. The examination showed caries in the maxillary left first permanent molar and both mandibular first permanent molars. He had two decayed maxillary central incisors (the right central was

Figure 2. Scars from lesions caused by patient biting his tongue.

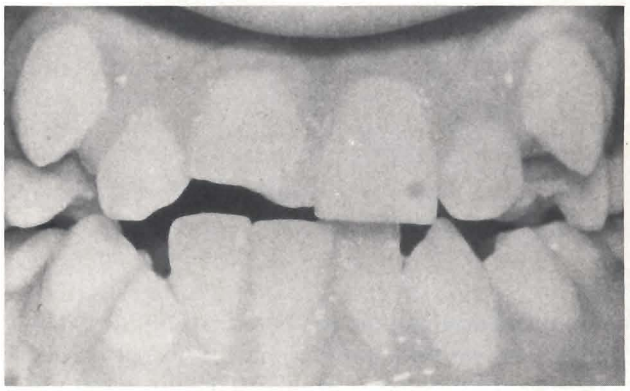

Figure 3. Fractured anterior teeth and a crowded dentition.

fractured) and an overbite with crowding more in the maxilla than in the mandible, probably because of a congenitally missing mandibular incisor. The treatment plan consisted of restorations, extractions, endodontics, and a prophylaxis. The major problem to be overcome was the management of the patient. Because of the behavior, one might have anticipated the need for general anesthesia. According to the literature, however, general anesthesia is only recommended in extreme situations for these patients. This was confirmed by consultation with the anesthesiologists at Children's Hospital of Philadelphia. It was suggested that an attempt be made to treat him in the office, using mepivacaine as a local anesthetic, if necessary. After informing the mother of the various problems in treatment, we decided to try a prophylaxis to evaluate behavior. This was accomplished without incident. Did this child need local anesthesia? We decided to try a test cavity on the lower left mandibular molar. He told us that he felt a "burning" sensation. This tooth was then immediately sealed with zinc oxide and eugenol. Since he did not overreact, we decided to try the extractions and restorations in the office. If this technique was successful, we would refer him to a local endodontist for treatment and attempt to transfer the trusting relationship.

The dentistry was completed in four visits consisting of quadrant care. Prior to each appointment, blood pressure and pulse were taken and noted. He breathed 20 percent nitrous oxide and 8 percent oxygen throughout each visit and than 100 percent oxygen for five minutes after each visit. An injection of 1.8cc of mepivacaine was used each time. His eyes were open and he responded to directions. All procedures were completed without incident. The restorative portion was concluded with a prophylaxis, polishing and topical fluoride application. Following this care, we referred M.P. to the endodontist for treatment of his maxillary central incisors. The endodontist followed our outline and treatment was finished rapidly and without incident. The patient was placed on a quarterly prevention program and dismissed for three months.

Several observations can be made from this case. First, this child is not Jewish. This makes his case an extremely rare one. Next, he can feel certain types of pain. This may not be true for every patient, but checking before operative procedures are initiated, is warranted. We were almost misled by this, since his physician thought that he did not need local anesthesia for extractions or endodontic therapy. Last, behavior modification is possible in certain cases.

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SEIZURES AND INTELLECTUAL DETERIORATION

Several authors have suggested that antiepileptic medication may be prescribed more often than necessary and that the benefits of such medication do not always outweigh the problems caused by the side effects. One of the many factors involved in decisions about how aggressive antiepileptic therapy should be is whether clinicians consider seizures to cause mental deterioration. In the groups of children with seizures in this study, we did not find that the occurrence of seizures was associated with a decline in full-scale IQ.

Ellenberg, J.H. *et al*: Do seizures in children cause intellectual deterioration?
N Engl J Med, 314:1085-1088, April 24, 1986.

Nutrition

Food allergies and other food sensitivities

Neil H. Mermelstein

Some people experience individualistic adverse reactions to foods that most other people can eat with no ill effects. These food sensitivites include true food allergy and various types of nonallergic food sensitivities.[1]

FOOD ALLERGY

True food allergy is an adverse reaction to a food or food component involving the body's immune system.[2] There are four types of allergy, but only two have definitely been associated with food.

Type I allergy

Also known as food anaphylaxis or immediate hypersensitivity. The symptoms result from the release of pharmacologically active substances (mediators) such as histamine from mast cells or basophiles in the body as a consequence of interaction between Immunoglobulin E (IgE) and the food component (usually protein) which causes the reaction (the allergen). Reactions usually occur within a few minutes to several hours after consumption of the offending food.

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Exercise-induced food anaphylaxis occurs when the specific food is ingested just before or after exercise.[3] However, many cases of exercise-induced anaphylaxis are not related to foods.[4]

Type IV allergy

Also called cellular or delayed hypersensitivity. This type of allergy involves the reaction of certain sensitized cells, usually lymphocytes, to the specific allergen, but the precise mechanism is poorly understood. Symptoms appear six to twenty-four hours after consumption of the offending food.

Allergic reactions have been associated with virtually every food in the American diet. The most common allergenic foods are cow's milk, eggs, peanuts, soybeans, tree units, fish, shrimp and other crustaceans, and shellfish.

NONALLERGIC FOOD SENSITIVITIES

Many food sensitivities do not involve the immune system.

Metabolic food disorders

These intolerances result from a defect in metabolism. For example, lactose intolerance is caused by a deficiency of the intestinal enzyme essential for the metabolism of lactose.[5]

Anaphylactoid reactions

These are caused by the ingestion of substances that release from the body's mast cells the chemical mediators (triggers) of allergic reactions, such as histamine, but without the interaction with IgE that occurs in food anaphylaxis. Strawberries, shellfish and chocolate can allegedly induce such reactions.

Allergy-like food intoxication

This results from the ingestion of a chemical mediator of allergic reaction. The only known example is histamine poisoning, or "scombroid fish poisoning," which is most commonly associated with the consumption of spoiled fish.[6]

Secondary food sensitivity

This occurs with or after the effects of other conditions. Examples include intolerances secondary to certain gastrointestinal disorders and increased sensitivities among patients on various drugs.[1,7,8]

Food idiosyncrasy

This occurs through unknown mechanisms, even psychosomatic illness. Examples are food-associated migraine headache, Chinese Restaurant Syndrome and asthma induced by sulfite or tartrazine, a yellow dye.

PREVALENCE

Popular views of the prevalence of food sensitivities tend to err on the high side, as a result of often inaccurate self-diagnosis and parental diagnosis. Studies of children have shown that two-thirds of the adverse reactions reported by parents cannot be confirmed by double-blind food challenges.[9] This situation is occasionally compounded by physicians who too readily use "food allergy" as a convenient diagnosis for unexplainable maladies.

Because people often do not seek treatment or the conditions are not properly diagnosed, the extent of true food allergies is not known. In all likelihood, food anaphylaxis affects less than 1 percent of the population. The incidence of non-IgE-mediated food allergies is unknown because good diagnostic tests are not available.

Lactose intolerance and celiac disease are the most common food sensitivities. Lactose intolerance in varying forms of severity may affect all segments of the population.[5] Celiac disease—an adverse reaction to gluten, the protein in wheat, rye, barley and oats—may affect 1 in 3,000 individuals in the U.S.[10]

Tartrazine-induced asthma is estimated to affect 4 percent to 6 percent of all aspirin-sensitive asthmatics (about 5,000 people in the U.S.).[11,12] Sulfite-induced asthma is estimated to affect from 5 percent to 10 percent of severe or steroid-dependent asthmatics (about 90,000 people in the U.S.) to 5 percent to 10 percent of all asthmatics (about 450,000 people).[13-15]

Many food sensitivities are inherited. True food allergies are much more likely to develop in children of allergic parents than in children of non-allergic parents. Lactose intolerance occurs in up to 90 percent of some ethnic groups. Whether food idiosyncrasies are inherited is uncertain.

The prevalence of food sensitivities tends to vary with age. About 5 percent of all infants under six years of age risk adverse reactions to foods. The most frequently encountered reaction (rash and/or diarrhea after being fed fruit or fruit juices) is likely to be nonallergic.[16] Infants with true food allergies tend to outgrow their

sensitivities within a few years.[17] Milk and egg allergies more often decline or disappear with increasing age than peanut and fish allergies. Lactose intolerance becomes more common as we grow older because intestinal lactase activity decreases.[5] Allergies can develop at any age, although infants are most susceptible.

SYMPTOMS

"Lactose" intolerance gives the victim gastrointestinal symptoms, such as flatulence, cramping and diarrhea after ingestion of a provoking dose of lactose. Celiac disease is characterized by gastrointestinal symptoms, but it can also involve weight loss, failure to grow, anemia, chronic fatigue, bone pain, muscle cramps and skin disorders.

With true food allergies, gastrointestinal symptoms are most common, but skin and respiratory systems may also be affected. "Anaphylactic shock," a rare but potentially life-threatening result of true food allergy, can result in severe itching and hives, perspiration, constriction of the throat, breathing difficulties, lowered blood pressure, unconsciousness and death, often rapidly.

The symptoms of anaphylactoid reactions and histamine poisoning are very similar to those observed with food allergies. Food idiosyncrasies can have a host of different symptoms involving the stomach, intestines, bowel, skin, lungs, blood and nervous system.

DIAGNOSIS

The diagnosis of food sensitivities can be complicated, given the variety of disease mechanisms and symptoms that can be involved. Diagnosis should, in many cases, include an objective assessment of the possible contribution of specific foods to the adverse reaction. Challenge testing—in which the suspect food or food component is ingested in measured amounts under controlled conditions—is the preferred method, but it should never be performed on individuals who have a history of severe reactions, such as anaphylactic shock.[2] Blind tests, especially double-blind challenge tests where neither the patient nor the physician knows whether the patient is receiving a placebo or the incriminated food, are especially useful.

Challenge testing is not always necessary for a diagnosis of food sensitivity, especially in the case of IgE-mediated food allergies where several other diagnostic tests can be used.[1,18] The skin prick test, using carefully prepared extracts of foods, is the most common procedure for diagnosing Type I food allergy. Most experts, however, prefer to have skin prick tests confirmed by challenge testing. Diagnostic tests are not routinely available to identify Type IV food allergies.

Lactose intolerance is usually diagnosed by giving a fasting individual 50 g of lactose and measuring blood glucose levels. Celiac disease is usually diagnosed through intestinal biopsy and the results of elimination-challenge trials. Idiosyncratic reactions are usually confirmed by challenge testing only, because other reliable diagnostic procedures are not available.

Several controversial tests, including food extracts placed beneath the tongue (sublingual challenges) and cytotoxic food testing are sometimes used to diagnose food sensitivities, but there is no proof that these procedures have any value.

TREATMENT

For most food allergies, avoiding the offending foods is the most effective treatment. In some cases, substitute foods can be found—e.g., soy-based formula for infants who have problems with cow's milk. Simple foods used in simple applications are not too difficult to avoid, but a food or food component used as an ingredient in a formulated food (e.g., cake, gravy, soup, salad dressing) is less obvious. A sufferer must become an avid reader of food labels and also become familiar with the composition of standardized foods,such as mayonnaise, catsup, peanut butter and syrup. Most food processors, if approached through a letter that clearly explains the individual's problem, are willing to indicate in which of their products a given food or functional ingredient may be found. The lack of labeling information for restaurant foods can be a particular problem.

How selective or painstaking an avoidance diet must be depends upon the individual's sensitivity. Some individuals with true food allergy may suffer adverse reactions to even trace quantities of an offending food. For these people, a tolerance level (the threshold level at which the reaction no longer occurs) may either be extremely low or not exist at all.

With metabolic food disorders, tolerance levels do seem to exist but vary with the individual. Some lactose-intolerant individuals can safely ingest small quantities of lactose with no adverse reaction, while others must carefully avoid all lactose.[19,20] Tolerance levels also seem to exist for some forms of food idiosyncrasy, such as sulfite-induced asthma, but may or may not exist for others.

Extreme sensitivity especially accompanies IgE-mediated food allergies. Persons who would suffer life-threatening reactions to minute traces of the offending

food should carry epinephrine (adrenalin) kits at all times. Careful examination of the patient's history will usually specify which individuals must take such precautions.

Obviously, those few individuals with extreme sensitivities should avoid the offending food in all forms. However, since it is the protein in the food that causes the allergic reaction, less-sensitive allergic individuals may be able to consume other forms of the food. For example, few people are allergic to edible oils which contain no detectable protein component, and peanut oil and soybean oil have been shown to be safe for individuals with allergies to peanuts or soy.[21,22]

Cross-reactivity can be a serious problem for the food-allergic individual. For example, the peanut-allergic individual must be aware of possible reactions to other legumes. Usually, cross-reactions occur between genetically related foods, such as peanuts and soybeans, shrimp and crab, or cow's milk and goat's milk. Cross-reactions do not inevitably occur, but they must be considered in constructing an avoidance diet.

Other approaches can also help to manage food allergies. Drugs provide only brief, symptomatic relief at present. The use of breast feeding to avert food allergies in infants is somewhat controversial. Most studies indicate that prolonged breast feeding (6-12 months) is beneficial to prevent food allergies in infants, especially babies of allergic parents, but some studies indicate that it has little or no prophylactic value.[23,24]

Immunotherapy, or desensitization therapy, for the treatment of food allergies is extremely controversial. There is no evidence that it is beneficial.[25]

In some cases, a food can be treated to destroy the allergen. Cooking may alter the chemical structure of the allergen and render it inactive. However, this does not always work and should be used only with proper guidance. Other methods remove or convert the offending substances. Examples include use of lactase enzyme to convert milk for lactose-intolerant individuals and use of gluten-free flour in some baked products for celiac patients.

CONCLUSIONS

Food allergies and other food sensitivities plague a large number of people with symptoms ranging from the merely annoying to the life-threatening. People with food allergies or other food sensitivities must alter their lifestyles to avoid the offending foods. Avoidance diets can be a safe and effective treatment, but the skilled assistance of knowledgeable dietitians to help construct a useful diet is essential. The first step should be to seek an accurate diagnosis from a clinical specialist. Too often, self-diagnosis and parental diagnosis are wrong and lead to unnecessary alterations to the diet. A medically supervised challenge test is usually necessary to obtain an accurate diagnosis.

The food industry must continue to be alert to the needs of these consumers by providing accurate and complete ingredient lists and supplying additional information on ingredients when asked. Food service people also should become informed about ingredients in the foods they serve. Research is also needed to develop specific products for sufferers of food sensitivities.

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Stone age nutrition: implications for today

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The nutritional parameters appropriate for humans today reflect genetically determined biochemical and physiological factors which have evolved over literally hundreds of millions of years.[1-3] Many of our most basic metabolic processes, those with which the foods we eat interact to produce either health or disease, are functionally similar to those of other mammals, vertebrates and, in some cases, even unicellular organisms.[2] The similarity of important metabolic pathways in life forms so diverse indicates that the genes which determine them are almost inconceivably ancient.

From the genetic standpoint, humans today are almost identical to our ancestors of 40,000 years ago. However, fast-paced cultural changes, beginning with the development of agriculture and accelerating since the Industrial Revolution to the dizzying pace of twentieth century "progress," have created an Atomic Age biobehavioral environment in some ways at odds with our Stone Age genetic heritage.[4]

Differences between the dietary patterns of our remote ancestors and those now prevalent in industrialized societies appear to have important implications for health. Though Darwinian natural selection has provided us with nutritional adaptability, humans today are confronted with diet-related health problems that were previously of minor importance and for which prior genetic adaptation has been unable to prepare us completely.[5] For example, atherosclerosis (including coronary heart disease), obesity, hypertension, diabetes and certain important cancers have assumed epidemiological prominence only in the past century. Such conditions have been rare among recently studied hunter-gatherers, whose lifestyles and eating habits closely resemble those of preagricultural humans.[6]

In today's industrialized nations, life expectancy is approximately twice that of our Stone Age ancestors, who suffered from high infant mortality, traumatic conditions and endemic infections which we can now largely control. However, it is not only because persons in Western nations live longer that chronic illnesses have become our paramount causes of death. Young people in industrialized nations commonly harbor developing asymptomatic forms of these diseases, but preliterate youths do not. Moreover, members of technologically primitive cultures who survive to age sixty or more remain relatively free from these disorders in striking contrast to their "civilized" cousins. These observations indicate that differences between the nutrition of our remote ancestors and that which is common in affluent 20th century nations are worthy of investigation. Similarly important factors, such as caloric excess, physical activity, tobacco and alcohol, also deserve consideration, but are beyond the scope of this paper.

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NUTRITIONAL EVOLUTION

While the earliest hominids (our prehuman ancestors) were, like all primates, omnivorous, their diet appears to have emphasized fruit.[1] However, after *Homo erectus* appeared, between 1.8 and 1.6 million years ago, meat assumed an increasingly prominent dietary role. This may have been obtained largely by scavenging at first, but hunting thereafter became the primary occupation of men, while women gathered the vegetable foods which, during most of our paleolithic existence, provided over 50 percent of our diet. Interestingly, both aquatic foods and cereal grains appear to have been paleontologically "late" additions to human nutrition. Neither category seems to have been widely utilized before about 20,000 years ago.

During the millennia after anatomically modern humans (*Homo sapiens*) first appeared, about 40,000 years ago, concentration on big-game hunting peaked and meat may have provided over 50 percent of the diet at that time. However, during the period immediately preceding the development of agriculture, 10,000 years ago, there was a shift toward a broader spectrum of subsistence activities. This involved a definite increase in the amount of vegetable material together with decreased meat consumption. Modern hunter-gatherers most closely resemble the human beings of this relatively recent period. Agriculture markedly altered human nutritional patterns; over the course of a few millennia, the proportion of meat declined drastically, vegetable foods came to make up as much as 90 percent of the diet and dairy foods first became available for older children and adults. Concomitantly, average human height diminished by ten centimeters.[7] This was probably the result of decreased dietary protein together with an increased frequency of infectious childhood diseases which became more common as population density increased.

Since the Industrial Revolution, the animal protein content of Western diets has increased as has our height; we are now nearly as tall as were the first biologically modern human beings. However, our diets still differ markedly from theirs and these differences are major factors in what has been theorized by some to represent "affluent malnutrition."[8]

THE NUTRITION OF RECENT HUNTER-GATHERERS

The diets of hunter-gatherer peoples studied in this century encompass a broad range; groups living in arid desert environments have obtained only 10 percent to 15 percent of their food, by weight, from animal sources, whereas arctic Eskimos obtain less than 10 percent of their diet from vegetation. However, when nutritional data from fifty-eight technologically primitive societies are pooled, the mean, median and mode all converge on a dietary ratio of 35 percent meat and 65 percent vegetable foods.[9] Of course the lives of twentieth century foragers differ in many ways from those of humans who lived before the advent of agriculture. Still the range and content of the foods today's foragers consume are reasonably similar (in the sense that they represent wild game and uncultivated vegetable foods) to those that our hunter-gatherer ancestors ate for millions of years. Thus, an analysis of these foods can provide a rational estimate of the nutritional elements which have helped shape our current genetic constitution.

Meat

The nutritional properties of wild game differ importantly from those of meat available in the modern supermarket. The latter has much more fat: up to 25 percent to 30 percent or even more in contrast to an average 4 percent in wild game. Not only is there more fat in meat from domesticated animals, the composition of the fat is different.[10] Wild game contains five times more polyunsaturated fat per gram of total fat and it contains long-chain polyunsaturated "omega-3" fatty acids (such as eicosapentaenoic acid, EPA), which are under intense current investigation because of their apparent antiatherosclerotic actions. Because of its lower fat content, meat from wild animals has fewer calories and more protein per unit weight than does domestic beef; however, its cholesterol content is essentially identical.

Vegetable foods

While many domesticated food plants have higher ratios of starch to protein than do their wild forms, the inherent nutritional differences between cultivated and uncultivated varieties are much less striking than are those between game and supermarket meat. However, between harvest and table, sequential changes commonly increase the fat, sodium, sugar and energy (while decreasing the potassium and fiber) associated with the vegetables and fruits we actually consume.

DAILY NUTRITION FOR EARLY HOMO SAPIENS

Energy

Representative nutrient values for wild game and for vegetable foods consumed by recent hunter-gatherers are available; these values can be used to estimate the daily nutrient intake for paleolithic humans. If a daily energy intake of 3000 kcal. and a 35 percent meat, 65 percent vegetable subsistence pattern are assumed, then the total weight of food necessary each day would be about 2250 gms of which about 790 gms would have been provided by game and 1460 gms by wild plant foods. This model, which is described in more detail in the original publication, has been used to reconstruct the average daily intakes for paleolithic humans as described below.

Fat

Total fat intake would have been roughly 70 gms, 30 gms from game and 40 from vegetables, fruits, nuts and other plant sources. Fat from wild game is about 30 percent polyunsaturated and 40 percent saturated, while the fat from wild plant foods is about 40 percent polyunsaturated and a bit over 15 percent saturated. Accordingly, the overall ratio of polyunsaturated to saturated fatty acids in the paleolithic diet would have been about 1.4.

Cholesterol

Cholesterol concentration in meat from domesticated and wild animals is about equal, so paleolithic humans would have consumed over 590 mg each day.

Sodium and potassium

Assuming meat from game is similar to that from domesticated animals in its concentration of sodium and potassium, the total daily intake of sodium, from both plant and animal sources, would have been about 690 mg and the potassium: sodium ratio, 16:1.

Calcium

The plant foods consumed each day would have provided 1500 mg of calcium for each person and meat would have provided an additional 80 mg for a grand total of 1580 mg—without any dairy foods.

Ascorbic acid

Many of the wild vegetable foods consumed by recent hunter-gatherers have remarkably high vitamin C concentrations. It is likely that paleolithic diets would have provided over 390 mg of ascorbic acid each day.

Fiber

Since their processing techniques were rudimentary, the large volume of uncultivated fruits and vegetables in the average paleolithic diet would have provided about 45 gms of nonnutrient fiber each day—far more than does the typical Western diet.

Other nutrients

The high meat content of paleolithic diets would have provided ample amounts of iron, vitamin B_{12}, and folate. In addition, recent hunter-gatherers invariably enjoy a wide variety of plant foods so that other micronutrient needs would have been easily met in most circumstances. Geographically localized iodine deficiency is the likeliest exception to this generalization.

CONTRASTS BETWEEN PALEOLITHIC AND CONTEMPORARY NUTRITION

In today's Western nations, the foods we eat are normally divided into four basic groups: meat and fish, vegetables and fruit, milk and milk products, and breads and cereals. Stone Age humans, however, derived nearly all their nutrients from just the first two of these. They seem to have had little use for cereals—presumably because fruits and vegetables requiring less processing were readily available. And, because they had no domesticated animals, they had no dairy foods at all after weaning. Despite this, the high intrinsic calcium content of their uncultivated vegetable foods would have provided more calcium than the highest current estimate for daily need. The Cro-Magnons and Neanderthals had massive bones, suggesting that their calcium intake was at least adequate. The relatively great quantities of meat consumed by paleolithic humans provided three to five times the dietary protein of twentieth century Americans, but also necessitated a cholesterol load similar to ours today, much above contemporary recommendations.

CONCLUSION

In the last century, life expectancy has increased dramatically and acute infectious diseases have been replaced by chronic degenerative conditions as the major causes of mortality. The extent to which "affluent malnutrition" underlies the major chronic illnesses is controversial, but nutritionists and physicians are beginning to define a generally preventive diet, one of benefit against a spectrum of illnesses, including high blood pressure, heart attack, stroke and certain important cancers. Preventive diets of this sort share significant features with the Stone Age nutritional pattern. The diet of our remote ancestors may come to be regarded as a paradigm for modern human nutrition; paleolithic dietary principles along with the investigative insights of modern nutritional science may together provide an effective defense against the "diseases of civilization."

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PATHOGENESIS OF DENTAL DEFECTS IN BIRTH PREMATURITY

Systemic insults to the developing primary teeth may occur prenatally, neonatally, or postnatally. The factors are diverse and may be classified as birth trauma, infections, nutritional disorders, metabolic disorders, and chemicals. However, although the relationships between these causative factors and enamel hypoplasia have been well described, the actual mechanisms of tissue damage are not well understood.

One possibility is that the offending agent damages the ameloblasts directly. For example, maternal infections such as syphilis, rubella, and cytomegalovirus may result in direct cellular injury by the infecting organisms. These maternal infections are often associated with birth prematurity; hence, it is possible that enamel hypoplasia seen in prematurely-born children may be related to such infections. Another possibility is that the febrile state accompanying many infections may cause ameloblastic damage.

Another hypothesis for the pathogenesis of enamel defects in prematurely-born children is that severe metabolic derangements can arise from various systemic derangements can arise from various systemic factors associated with birth prematurity. These include maternal diabetes, maternal toxaemia, hypoxia, hyperbilirubinaemia and respiratory distress. Most authors describing the association of these conditions with enamel hypoplasia in the premature infant suggest a direct adverse effect of these metabolic derangements on the developing teeth. Although this may occur, it is also possible that the hypocalcaemia associated with these conditions results in disturbed enamel formation.

Superimposed upon the above is another aetiological factor which must be considered in the pathogenesis of enamel defects in the prematurely-born child. This is the problem of deranged calcium metabolism, which occurs in most premature infants in varying degrees.

Seow, W.K.: Oral complications of premature birth. Aust Dent J, 31:23-29, February, 1986.

Abstracts

Flaitz, Catherine M.; Nowak, Arthur, J.; Hicks, M. John: Evaluation of the anterograde amnesic effect of rectally administered diazepam in the sedated pedodontic patient. J Dent Child, 53:17-20, January-February, 1986.

The anterograde amnesic property of rectally administered diazepam was investigated in twleve uncooperative preschool children requiring sedation during dental treatment. In this double-blind study during two standardized restorative appointments, a dose of either diazepam in solution or sodium chloride was randomly dispensed rectally. Amnesia was observed in this study in the majority of children during the diazepam treatment appointment, occurring when the sedated children were cooperative and responsive.

Sedation, diazepam, amnesia

Pierce, Angela M.; Lindskog, Sven; Hammarstrom, Lars: IgE in postsecretory ameloblasts suggesting a hypersensitivity reaction at tooth eruption. J Dent Child, 53:23-26, Janaury-February, 1986.

The clinical symptoms associated with eruption of primary teeth resemble a mild hypersensitivity reaction. Auto-antigenic enamel matrix proteins bring about formation of IgE through their exposure to immunocompetent extrafollicular IgE-positive cells. IgE may be involved in creating the eruption force, by means of an intermittent histamine-induced periapical vascular leakage.

Tooth eruption, histamine, amelogenesis, immunoglobulin

Miller, John; Okoisor, F.E.; Liddington, Derek A.: Dental disease as an indication of nutritional problems. J Dent Child, 53:27-31, January-February, 1986.

This study was undertaken with 293 Nigerian children, ages 2-6, to relate height and weight to dental disease. The children in Lagos, Nigeria, were shorter and lighter than children of similar ages in Wales. Nigerian children from large families were shorter, lighter, and had worse periodontal conditions than children from smaller families.

Dental disease, epidemiology

Ohishi, Masamichi *et al:* Hallermann-Streiff syndrome and its oral implications. J Dent Child, 53:32-37, January-February, 1986.

A patient diagnosed as having oculo-mandibulodyscephaly, or Hallermann-Streiff syndrome, was followed from birth for nine years. The oral manifastations during the course of the follow-up period are given. Full knowledge of this condition is required for dentists.

Hallermann-Streiff syndrome, caries, mandibular growth

Breen, Gary H.: Prophylactic dental treatment for a patient with vitamin D-resistant rickets: report of case. J Dent Child 53:38-43, January-February, 1986.

Conservative prophylactic treatment for a 4½-year-old boy with VDRR and a history of spontaneous dental abscesses has been successfully accomplished using chrome crowns and biologically compatible cements and bases. The patient has been free of oral abscesses for eighteen months.

Vitamin D-resistant rickets, chrome crowns

Chawla, H.S.: Apical closure in a nonvital permanent tooth using one $Ca(OH)_2$ dressing. J Dent Child, 53:44-47, January-February, 1986.

This clinical trial was conducted to study the effect of single $Ca(OH)_2$ root canal dressings on apical closure. In this study, only two of twenty-six

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teeth required repeat dressings. The apical bridge was discernible radiographically after 12 months in all twenty-six teeth.

Apical closure, $Ca(OH)_2$ dressings

Cipes, Monica H.; Miraglia, M.; Gaulin-Kremer, E.: Monitoring and reinforcement to eliminate thumbsucking. J Dent Child, 53:48-52, January-February, 1986.

Because persistent thumb- or finger-sucking can be associated with dental malocclusion in the growing child, this pilot study tested the effectiveness of monitoring and positive reinforcement in five to nine-year old children. Stars were placed on a printed calendar to record the absence of thumbsucking at each observation; feedback and praise were given to the child for success. Notable declines in thumbsucking were observed with use of the calendars.

Behavior modification, thumbsucking

Blount, Ronald L. and Stokes, Trevor F.: A comparison of the OHI-S and the PHP in an oral hygiene program. J Dent Child, 53:53-56, January-February, 1986.

This study examined two critical measurement properties of the Simplified Oral Hygiene Index (OHI-S) and the Patient Hygiene Performance method (PHP). Interobserver reliabilities of the two indices and sensitivity of each to plaque decreases produced by toothbrushing were examined; either scale may now be used effectively when evaluating the impact of toothbrushing programs.

Simplified Oral Hygiene Index, Patient Hygiene Performance, toothbrushing

Gardner, Alvin F.: Dentistry and the technology connection. J Dent Child, 53:57-62, January-February, 1986.

In the future, the ability to provide dental treatment in conjunction with a computerized management system will not be sufficient to ensure success in dental practice. The profession will be required to raise the dental awareness of all sectors of society to help solve the problem of busyness. High technology should be cost-effective and improve productivity and income when implemented knowledgeably by the dentist.

Computers, practice management, continuing education

Maréchaux, Sabine C.: the problems of treatment of early ankylosis: report of case. J Dent Child, 53:63-66, January-February, 1986.

Ankylosis is one of three factors that cause a discontinuation of the normal physiological process of tooth eruption. The mechanism of ankylosis—studied by histological methods, radiographs, and/or charts and casts—nearly always occurs during the mixed dentition stage. In the patient reported on in this paper, the left mandibular primary second molar appeared to be ankylosed. Extraction in similar cases should be delayed to minimize space loss and prevent future orthodontic problems.

Ankylosis, tooth eruption, extraction

Tsukamoto, Suehiro and Braham, Raymond L.: Unerupted second primary molar positioned inferior to the second premolar: clinical report. J Dent Child, 53:67-69, January-February, 1986.

Only two case reports have been described, during the past ten years, concerning an unerupted primary molar in a position inferior to the premolar, both in the right mandibular primary second molar region. A ten-year-old Japanese boy is described in this clinical report. His dentition presented insufficient space for the permanent teeth: there was pain in the specific area; and it appeared that normal eruption could not occur without some teeth extracted as described.

Ankylosis, tooth eruption, extraction

Joshi, H.N.; Kansagra, P.J.; Dayla, P.K.: Facial myiasis: report of case. J Dent Child, 53:70-71, January-February, 1986.

A case in which maggots had infested a facial ulcer in a two-year-old Indian girl is described. Treatment consisted of removing the larvae with turpentine oil and tweezers; healing occurred rapidly after debridement and irrigation with saline solution. The larvae were identified as chrysoma bazina. This case appears to be the first report of facial myiasis in India.

Facial myiasis, wound healing

Nevo, O. and Shapira, J.: Use of humor in managing clinical anxiety. J Dent Child, 53:97-100, March-April, 1986.

Because anxiety and fear can influence the child's willingness to follow the course of dental treatment, behavioral techniques that can manage or reduce that anxiety, such as systematic desensitization, are necessary.

Humor may help by changing emotions and perception or cognitive assumptions, especially when time is limited in the dental setting. A survey of pediatric dentists was taken to determine their uses of humor. Dentists create a playful/humorous atmosphere by verbal and nonverbal cues, producing humorous bisociations, incongruities, rhymes, absurdities, exaggerations, and puns. Their humor serves several functions and is an effective complementary device to behavior management.

Pedodontists, Humor, Anxiety

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Barconey, L.S. and Johnson, R.: Parental influence on child preference of a dentist. J Dent Child, 53:101-104, March-April, 1986.

While their mothers were given a questionnaire, 170 children 4-5 years old were interviewed to determine whether a child's opinion and selection of which person of four they perceive to be a dentist would be similar to their mother's choice. Interviews consisted of showing photographs of two males and two females to the child and asking the child questions. The child had to identify which one was the dentist from the four persons shown, and which one they would prefer. The child's preference of a dentist was related to their own sex and parents did not appear to influence their child's selection of a dentist.

Parental attitudes, Preschool children

Chen, M.: Children's preventive dental behavior in relation to their mothers' socioeconomic status, health beliefs and dental behaviors. J Dent Child, 53:105-109, March-April, 1986.

Which is the most dominant factor among the mothers' variables that contribute to children's preventive dental behavior? Analysis of a sample of 495 white American families with children ranging in age from 7 to 18 showed that mothers' preventive dental behaviors were most strongly correlated with children's corresponding behavior.

Parental attitudes, Dental behavior, Prevention

Kronmiller, J.E.; Nirschl, R.F.; Close, J.M.: Evaluation of bitewing intervals in children. J Dent Child, 53:110-114, March-April, 1986.

The purpose of this study was to determine an average interval between positive readings of interproximal caries on bitewing radiographs for 145 pediatric dental patients. The average positive bitewing interval of 17.7 months is consistent with recommendations of 12- to 24-month intervals reported in the literature.

Bitewing radiographs, Interproximal caries, Radiograph intervals

Nazif, M.M.; Zullo, T.; Paulette, S.: The effects of primary molar ankylosis on root resorption and the development of permanent successors. J Dent Child, 53:115-118, March-April, 1986.

We investigated the effects of ankylosis on root resorption of involved mandibular primary molars and the root development of their permanent successors. A total of 54 healthy white children ages 6-15, with 125 ankylosed molars, were included. There was a statistically significant association between the delay in root resorption of the first and second ankylosed primary molars and the delay in root formation of their permanent successors.

Ankylosis, Root resorption

Falomo, B.: Fractured permanent incisors among Nigerian school children. J Dent Child, 53:119-121, March-April, 1986.

An epidemiology survey was conducted on 2,979 Nigerian school children to assess the prevalence of fractured incisors. Of this group, 14 percent had one or more fractured incisors, with the most frequent incidence at 14 years of age. The maxillary incisor was the tooth most frequently involved and falls accounted for three fourths of the accidents, in part because of the rough terrain in Nigeria

Tooth fracture, Ellis Class I; Trauma

Steelman, R.: Incidence of an accessory distal root on mandibular first permanent molars in Hispanic children. J Dent Child, 53:122-1232, March-April, 1986.
Because accessory distal roots on mandibular first permanent molars occur in various ethnic groups, this study was initiated to determine the incidence in 156 Hispanic children. Radiography showed 8.2 percent of the 73 boys and 4.8 percent of the 83 girls (6.4 percent overall) had an accessory distal root on the mandibular first permanent molar; these results differ from published reports on other ethnic groups.
Accessory roots, Hispanic children

Maréchaux, S.C.: The single maxillary central primary incisor: report of case. J Dent Child, 53:124-126, March-April, 1986.
The case reported here is an example of a single anomaly that is not apparently associated with any other anomalies. The patient is of normal height and within normal range for his development. In rare cases of the solitary maxillary incisor, the tooth is always present in the midline, is morphologically symmetrical, and should always be assessed for orthodontic and prosthetic treatment.
Solitary maxillary incisor, Anomaly

Farole, A. and Adlesic, E.C.: Garre's osteomyelitis: report of case associated with a granuloma. J Dent Child, 53:127-130, March-April, 1986.
Reports of Garre's osteomyelitis usually trace the etiology of this condition to a carious, perhaps non-restorable tooth. This paper reports a case of Garre's with an atypical cause. A differential diagnosis of other (sometimes more occult) conditions that appear with similar clinical and radiographic findings are included.
Garre's osteomyelitis, Granuloma

Kronmiller, Jan E.; Nirschl, Ronald R.; Zullo, Thomas G.: An evaluation of pit and fissure caries and caries experience as selection criteria in bitewing examinations for childen. J Dent Child, 53:184-187, May-June, 1986.
The relationship between pit and fissure caries and posterior interproximal caries, and the relationship between caries history and posterior interproximal caries were examined to determine the efficacy of the use of caries experience as a selection criterion for bitewing radiographic examinations. The correlations were not found to be statistically significant. For pediatric dental patients living in fluoridated communities, these criteria are not reliable indicators in determining the frequency of bitewing radiographs.
Bitewing radiographs, Interproximal caries

Helpin, M.L. and Duncan, W.K.: Ankylosis in monozygotic twins. J Dent Child, 53:125-139, March-April, 1986.
Ankylosis, the fusion of tooth cememtum to alveolar bone, is a process of noneruption and fixation. Monozygotic twins with nearly identical patterns of ankylosed teeth and severity of involvement are described in this case report. The findings in these twins reinforce the theory that there is a strong genetic component in the process of ankylosis.
Ankylosis, Heredity, Monozygotic twins.

van Amerongen, W.E. and Eggink, C.O.: The cervical margin of amalgam restorations: a radiographic and clinical assessment. J Dent Child, 53:177-183, May-June, 1986.

Although it is generally recognized that achieving good adaptation to the cervical margin is difficult, there are no reliable data on the percentage of failures, in part because investigators have preferred different methods to assess this criterion. Comparison of the results of clinical assessment with those performed radiographically showed that there were no significant differences between the two methods. Using both methods, only 20 percent of the cervical margins showed good adaptation.

Radiography, Clinical assessment, Class II amalgam

Siegel, Mark, D.; Umland, Edith; Mandell, Robert L.: Localized juvenile periodontitis of the primary dentition. J Dent Child, 53:193-196, May-June, 1986.

Microbiological studies have shown a strong association between a gram-negative, anaerobic, rod-shaped microorganism, *Actinobacillus actinomycetemcomitans* and localized juvenile periodontitis. A case report describing an 8-year-old white boy with localized juvenile periodontitis affecting the primary dentition is given. A simple method of culturing for the microorganism was used to support the diagnosis. The definition of the disease should encompass the primary dentition and the associated earlier age group.

Localized juvenile periodontitis, primary dentition

Skinner, Mark F. and Tat Wai Hung, John: Localized enamel hypoplasia of the primary canine. J Dent Child 53, 197-200, May-June, 1986.

Enamel hypoplasia lesions, restricted to the labial aspect of the primary canine, frequently seen in prehistoric children, appear to be caused by minor physical trauma to the developing tooth germ, beginning at birth, and high incidences probably reflect hypocalcemic states in the infant or the mother. A clinical examination of 2,367 Canadian schoolchildren near Vancouver, B.C., showed the defect occurring in fewer than one percent of these children.

Enamel hypoplasia, Primary canine teeth