

THIRD EDITION

Dentistry for the child and adolescent

**RALPH E. McDONALD
DAVID R. AVERY**

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RALPH E. McDONALD, B.S., D.D.S., M.S.

Professor of Pedodontics and Dean, Indiana University
School of Dentistry, Indianapolis, Indiana

DAVID R. AVERY, B.S., D.D.S., M.S.D.

Associate Professor and Chairman of Pedodontics,
Indiana University School of Dentistry,
Indianapolis, Indiana

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CONTRIBUTORS

DAVID R. AVERY, B.S., D.D.S., M.S.D.

Associate Professor and Chairman of Pedodontics, Indiana University School of Dentistry

DAVID BIXLER, D.D.S., Ph.D.

Professor of Basic Science and Medical Genetics and Chairman of Oral Facial Genetics, Indiana University School of Dentistry and Indiana University School of Medicine

DONALD M. CUNNINGHAM, D.D.S., M.S.D.

Professor and Co-Chairman, Fixed and Removable Partial Prosthodontics, Indiana University School of Dentistry

W. BAILEY DAVIS, A.B., D.D.S.

Professor of Pedodontics, Indiana University School of Dentistry; Director of Hospital Dental Services for Children, James Whitcomb Riley Hospital for Children

ROLAND W. DYKEMA, D.D.S., M.S.D.

Professor and Co-Chairman, Fixed and Removable Partial Prosthodontics, Indiana University School of Dentistry

LaFORREST D. GARNER, D.D.S., M.S.D.

Professor and Chairman of Orthodontics, Indiana University School of Dentistry

CHARLES W. GISH, D.D.S., M.S.D.

Co-Chairman of the Department of Community Dentistry and Professor of Community Dentistry and Pedodontics, Indiana University School of Dentistry

DAVID K. HENNON, D.D.S., M.S.D.

Associate Professor of Pedodontics, Indiana University School of Dentistry

CHARLES E. HUTTON, D.D.S.

Professor and Chairman of Oral Surgery and Director of the Oral Surgery Internship-Residency Program, Indiana University School of Dentistry

MAURICE J. KELLER, D.D.S.

Consultant in Pedodontics, Indiana University School of Dentistry

JAMES F. MATLOCK, D.D.S., M.S.D.

Associate Professor, Department of Radiology, Indiana University School of Dentistry

RALPH E. McDONALD, B.S., D.D.S., M.S.

Professor of Pedodontics and Dean, Indiana University School of Dentistry

WILLIAM W. MEROW, D.D.S.

Professor and Chairman of Orthodontics, West Virginia University School of Dentistry, Morgantown, West Virginia

RALPH W. PHILLIPS, M.S., D.Sc.

Research Professor in Dental Materials and Associate Dean for Research, Indiana University School of Dentistry

CHARLES POLAND III, D.D.S., M.S.D.

Assistant Professor of Pedodontics and Oral Facial Genetics, Indiana University School of Dentistry

JAMES R. ROCHE, D.D.S.

Assistant Dean for Faculty Development and Professor of Pedodontics, Indiana University School of Dentistry

WILLIAM G. SHAFER, D.D.S., M.S.

Distinguished Professor and Chairman of Oral Pathology, Indiana University School of Dentistry

PAUL E. STARKEY, D.D.S.

Professor of Pedodontics, Indiana University School of Dentistry

BERND WEINBERG, Ph.D.

Adjunct Associate Professor of Otolaryngology, Indiana University School of Medicine; Professor and Head, Department of Audiology and Speech Sciences, Purdue University

PREFACE

Advancements in pedodontics have been rapid during the past decade. New preventive procedures, improved restorative materials, and the recognition of dental problems of special groups of children have demonstrated the need for a book to deal with all aspects of pedodontic practice. This revision of the text has been developed as a practical yet scientifically substantiated approach to the dental health problems of children and adolescents.

Considerable emphasis is given throughout the book to preventive procedures recognized as effective in reducing in adults the crippling effects of dental neglect that are often traceable to the childhood period. The revision includes the currently accepted preventive practices that have proved effective in the private office and in community and school programs. Two entirely new sections have been added to the third edition: basic concepts of the growth of the face and dental arches and cephalometrics.

In addition to the subjects usually included in a textbook of pedodontics, a number of chapters are included that are unique to this book. Special radiographic techniques for preschool children and handicapped individuals are presented. A discussion of local anesthesia precedes the coverage of a wide variety of surgical procedures for the child patient. An in-depth consideration of periodontal disease, an often neglected area of dental practice for children, is included. Supporting this discussion is a chapter devoted to toothbrush-

ing and oral hygiene, with special emphasis on plaque control. The importance of nutrition in dental health is presented in a manner that should be useful in counseling parents.

Through research, many dental anomalies and disease entities have been shown to have a genetic relationship. The genetic aspects of both the common and uncommon dental conditions are discussed.

Adequate attention to the dental problems of the handicapped child has long been needed, and these problems are given special consideration. A related area, and another unique feature of the book, is the chapter on pedodontics and speech pathology. Cooperation of the dentist and speech pathologist will result in the recognition and treatment of speech and language difficulties and often in an improvement of the occlusion.

Dental health problems of the adolescent have not received adequate consideration from the physician and the dentist. Special restorative procedures, including crown and bridge techniques for the adolescent and young adult, are given a place of importance in this book.

Step-by-step procedures in practice administration and health education are presented by a recognized authority in these fields. The responsibilities of the dentist and each of his auxiliaries are clearly delineated.

Community dental health programs will receive even greater emphasis in the years ahead. The roles of the dentist, the hygien-

ist, and the dental society are presented here in considerable detail, with the objective for all being improved dental health of children.

The seventeen contributors who have joined the authors in the preparation of the revision of this book express a coordinated philosophy in the approach to the most modern concepts of dentistry for the child and the adolescent.

Throughout the book we have chosen to refer to the dentist as "he" and the dental assistant as "she." We are aware that more women are dental practitioners and that some men are assuming roles as dental auxiliaries. In a sense, therefore, it would be more accurate if both the dentist and the assistant were referred to as "he or she." However, in the interest of saving

space we decided in favor of the less cumbersome style.

A textbook can be planned and written only with the supportive interest, encouragement, and actual contributions of a great many people. This book is not a single effort; therefore, it is a privilege to acknowledge the assistance that so many have given in its preparation. Credit is gratefully extended to Mr. Richard Scott, Director of Dental Illustrations, and Dr. Rolando De-Castro, Director of Art, for many of the original photographs and illustrative materials. The faculty of the Department of Pedodontics, as well as the faculty in other departments, have made major contributions. Their help is gratefully acknowledged.

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CHAPTER 1

Examination of the mouth and treatment of anomalies of the teeth and soft tissues

RALPH E. McDONALD and DAVID R. AVERY

The importance of a complete oral examination and the development of a treatment plan before embarking on a dental care program for the child is emphasized throughout this book as it was in previous editions. A thorough examination is the prerequisite for treatment planning. No dentist should be pressured by a heavy schedule or by the demands to provide piecework dentistry, as is true in some national health service programs, and to relieve only acute symptoms without providing complete and adequate care. He will not receive adequate financial remuneration or personal satisfaction and will not be providing the most adequate type of dental service for the patient.

Each child patient should be given an opportunity to receive complete dental care. A dentist should not attempt to decide what the child, parents, or third-party agent will accept or can afford. If parents reject a portion or all of the treatment plan, the dentist has at least fulfilled an obligation if he has taken the time to educate the child and the parents about the importance of the procedures that have been outlined. Parents of even moderate income will usually find the means to have dental care completed if the fact can be explained to them that the child's future dental health and even his general health are related to the correction of dental defects.

Examination of the child patient, whether it be a first examination or a regular recall examination, should be all inclusive. The soft tissues, including gingivae, buccal tissues, tongue, floor of the mouth, and

palate, should be inspected as the first part of an examination procedure. The occlusion should next be critically examined, and a notation should be made of irregularities of a dental and skeletal nature. Finally, the teeth should be inspected carefully for evidence of carious lesions, hereditary anomalies, or pigmentation. The supplement to these examination steps is the radiographic examination.

Preliminary medical and dental history

It is important for the dentist to be familiar with the medical history and the past dental care of the child. The dental assistant can obtain sufficient preliminary information to provide the dentist with a knowledge of the child's general health and to alert the dentist to the need of obtaining additional information or even of requesting consultation with the child's physician.

The form illustrated in Fig. 1-1 can be completed by the parent. However, it is more effective for the dental assistant to ask the questions in an informal manner and then to present the findings to the dentist and give her own observations and summary of the case. The questions included on the form will also provide information regarding previous dental treatment.

If there is any indication of an acute or chronic systemic disease or anomaly, the dentist is well advised to consult the child's physician to learn the present status of the condition, long-range prognosis, and present drug therapy. Question 9 in the medical history form provides a subtle means of determining the child's psychologic and de-

PRELIMINARY MEDICAL AND DENTAL HISTORY

Child's name _____ Last _____ First _____ Middle _____ Age _____

Date of birth _____ Place of birth _____

Address: _____ Telephone _____

Check one:
Yes _____ No _____

1. Does your child have a health problem? _____

2. Is child under treatment by physician? _____

3. Has your child had any history of the following?
(If "Yes" please check the appropriate spaces.)

_____ Heart trouble	_____ Allergies	_____ Diabetes
_____ Asthma	_____ Epilepsy	_____ Tuberculosis
_____ Anemia	_____ Nervousness	_____ Rheumatic fever
_____ Kidney or liver involvement		_____ Bleeding disorders

4. Has your child experienced any unfavorable reaction to any medicine, such as penicillin, aspirin, local anesthetic? _____

5. Is your child taking any medication now? _____

6. Has your child ever been hospitalized?
If so, give date and reason.

Date _____ Reason _____

7. Date of last medical examination _____

8. Who is your family physician or pediatrician? _____

Address _____ Telephone _____

9. Do you consider your child to be: (check one)

_____ Advanced in the learning process
_____ Progressing normally
_____ A slow learner

Remarks (Notation must be made for each of the above "yes" answers): _____

Fig. 1-1. Form used in completing the preliminary medical and dental history.

velopmental age. Behavior problems in the dental office are often related to the child's inability to communicate with the dentist and to follow instructions, and this inability may be related to a low mental capacity. Parents often fail to volunteer the information that the child has a low IQ or that he is mentally retarded. An indication of mental retardation can usually be determined by the assistant when she asks questions about the child's learning process.

A notation should be made if the young child has been hospitalized previously for general anesthetic and surgical procedures. Shaw has reported that hospitalization and a general anesthetic procedure can be a traumatic psychologic experience for a young preschool child and may sensitize

him to procedures that he will encounter later in a dental office. If the dentist is aware of previous hospitalization and the child's fear of strangers in white, he can plan the necessary time and procedures to assist the child in overcoming the fear and can present dentistry in an acceptable manner.

The pertinent facts of the medical history obtained by the dental assistant can be transferred to the permanent chart (Fig. 1-2). If more space is needed to record the medical history, the additional facts can be recorded under the remarks in section 16.

The patient's previous dental history should be summarized next. This should include a record of previous care in your office and the facts related by the patient and the parent regarding previous care in

10. Explain briefly why you brought your child for dental care _____

	Yes	No
11. Is this your child's first visit to the dentist?	_____	_____

If "No" give the date of the last dental examination _____

12. Does your child have a toothache now?	_____	_____
13. Has your child had a toothache?	_____	_____
14. Does your child have frequent "cold sores" or "fever blisters"?	_____	_____

Remarks (Notation must be made for each of the above "yes" answers): _____

Date _____

Parent or Guardian _____

Relationship to child _____

Fig. 1-1, cont'd. For legend see opposite page.

Continued.

Fig. 1-2. Example of a cha
plan for the child patient.

(8) Refer to _____ for _____ Date _____ Refer to _____ for _____ Date _____ Refer to _____ for _____ Date _____ Refer to _____ for _____ Date _____ Refer to _____ for _____ Date _____		
(9) Temperament (10) Behavior Date _____ _____ _____ _____ _____ _____	(11) Caries activity tests (12) Fluoride content of the drinking water _____ ppm. Number of years exposure to present water supply _____	(13) Record of stannous fluoride treatments 1. Date _____ 4. Date _____ 2. Date _____ 5. Date _____ 3. Date _____ 6. Date _____ (14) Record of diet survey Date _____
(15) Treatment techniques		
(16) Remarks		

Fig. 1-2, cont'd. For legend see p. 5.

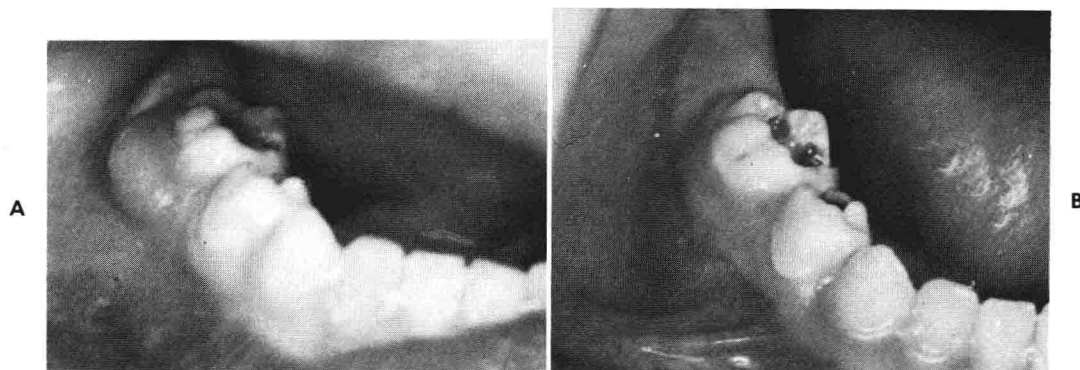


Fig. 1-3. A, Acute alveolar abscess associated with a pulpless second primary molar. B, Removal of the roof of the pulp chamber to allow drainage resulted in immediate relief of pain. After the swelling has been reduced, it can be decided whether the tooth is to be treated or extracted.

The new system is gaining popularity in teaching institutions around the world, in the armed forces, and in private practice.

Alveolar abscess

During the examination procedure the dentist may observe evidence of an acute or chronic alveolar abscess. An alveolar abscess associated with the pulpless permanent tooth is usually a specific lesion localized by a fibrous capsule produced by fibroblasts that differentiate from the periodontal membrane. The primary tooth abscess is usually evident as a more diffuse infection, and the surrounding tissue makes less attempt to wall off the process.

The most common microorganism associated with a periapical infection as verified recently by Turner and co-workers is *Streptococcus viridans*. The microorganism is susceptible to all antibiotics commonly recommended in dental practice, except the tetracyclines. The virulence of the microorganisms and the ability of the tissues to react to the infection probably determine whether the infection will be acute or chronic.

In the early stages the acute alveolar abscess can be diagnosed by radiographic evidence of a thickened periodontal membrane. The tooth will be sensitive to percussion and movement. In the chronic form the alveolar abscess is radiographically a large radiolucent area at the apical region of the roots and often in the interradicular region. The radiolucency in the primary molar

area may involve the developing permanent tooth.

The acute symptoms of an alveolar abscess can be relieved by establishing drainage and using an antibiotic that is effective against *Streptococcus viridans* (Fig. 1-3). A large opening should be made into the pulp chamber to permit drainage to continue until the acute symptoms have subsided. In 24 to 48 hours it can be determined if the tooth can be treated endodontically or if extraction is necessary. Should pain be encountered during the cutting of tooth structure to establish drainage, the pain can be lessened if the tooth is stabilized either by holding it or by a splint of impression compound.

Warm saline mouth rinses will often aid in localizing the infection and maintaining adequate drainage before endodontic treatment or extraction.

Cellulitis

Cellulitis, which is a diffuse type of infection of the soft tissues caused by a pulpless primary or permanent tooth, is relatively uncommon in children. The alveolar abscess remains localized, and the child does not experience acute symptoms. However, cellulitis often causes considerable swelling of the face or neck, and the tissue appears discolored. If a maxillary tooth is involved, the swelling and redness may involve the eye. The child will appear to be acutely ill and may have an alarmingly high temperature (Fig. 1-4).

The establishment of drainage by opening



Fig. 1-4. A, Patient appears to be acutely ill because of an infected permanent molar and resultant cellulitis. B, Use of broad-spectrum antibiotics reduced the acute symptoms of the disease and prevented extraoral drainage.

into the pulp chamber of the offending tooth will be helpful in reducing the acute symptoms of cellulitis. However, the child may have difficulty opening his mouth to permit the establishment of drainage. Broad-spectrum antibiotics should be prescribed early in an attempt to reduce the possibility of the infection localizing and drainage occurring on the outer surface of the face (Fig. 1-4, B).

Anomalies of the tongue

Child patients rarely complain of symptomatic tongue lesions. However, the tongue should be inspected carefully during the examination procedure. A number of benign conditions may be evident that should be brought to the attention of the parents.

Burket described four main types of papillae on the dorsum of the tongue. Large circumvallate papillae, eight to twelve in number, are found on the posterior border of the dorsum of the tongue. These large papillae have a blood supply and are the site of a large number of taste buds. Mushroom-shaped fungiform papillae are distributed over the entire dorsum of the tongue; however, they are present in a greater number at the tip and toward the lateral margins of the tongue. Inflammatory and atrophic changes occurring on the dorsum of the tongue may involve the vascularized fungiform papillae. The most numerous papillae of the tongue are the filiform, which are thin and hairlike

and are evenly distributed over the dorsal surface. The filiform papillae are without a vascular core, and their continuous growth is slight. The foliate papillae represent a fourth type and are arranged in folds along the lateral margins of the tongue; the taste sensation is associated with these papillae.

Macroglossia. Macroglossia refers to a tongue that is larger than normal; this condition may be either congenital or secondary in type. In congenital macroglossia the child is born with the malformation, and it becomes more and more apparent as he develops (Fig. 1-5). This form of macroglossia is due to an overdevelopment of the lingual musculature.

An abnormally large tongue is characteristic of cretinism, in which case the tongue is fissured and may extend from the mouth. Macroglossia may also be evident to a lesser degree in mongolism. Occasionally an allergic reaction will cause a transitory enlargement of the tongue, angioneurotic edema. Both the allergic reaction and the traumatic injury can cause such severe enlargement of the tongue that a tracheotomy is necessary to maintain an airway.

A disproportionately large tongue may cause an abnormal growth pattern of the jaws and a malocclusion. Flaring of the lower anterior teeth and an Angle Class III malocclusion are occasionally the result of macroglossia.

The treatment of macroglossia depends