

# Dentistry in Cerebral Palsy and Related Handicapping Conditions

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*Professor Emeritus of Dentistry*

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*Attending Dental Surgeon*

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*Presbyterian Hospital*

*Columbia-Presbyterian Medical Center*

*New York, New York*

*With a Foreword by*

**RALPH E. McDONALD**

This important new book presents all aspects of dentistry for patients with cerebral palsy and related handicapping conditions, and fully describes the correct procedures to remedy their dental and oral problems. The author emphasizes the need for intelligent, perceptive dental treatment based on an understanding of the conditions and their neurological and behavioral features. Restorative and preventive procedures to correct dental and oral problems, orthodontics, preoperative sedation, and general anesthesia in dentistry are fully explained. The establishment of community dental health programs for the handicapped is also discussed. This text provides all the information necessary for dentists, specialists and auxiliary personnel to provide quality care for handicapped children and adults.

*American Lecture Series®*



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**DENTISTRY IN CEREBRAL PALSY  
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*Publication Number 1016*

AMERICAN LECTURE SERIES®

*A Monograph in*

*The BANNERSTONE DIVISION of*  
AMERICAN LECTURES IN CEREBRAL PALSY

*Edited by*

CHESTER A. SWINYARD, M.D., Ph.D.  
*Visiting Professor Emeritus of Surgery*  
*The Children's Hospital at Stanford*  
*Palo Alto, California*

to My Wife  
Beverly  
and  
Roger and Rima  
Dwight, Frederick, and Elliott

## FOREWORD

THERE is much evidence that progress is being made in providing good preventive and restorative dental care for the cerebral palsied individual. In dental education programs throughout the United States and Canada the subject of dental care for the cerebral palsied patient is receiving emphasis. Training grants supported by the United Cerebral Palsy Research and Education Foundation have resulted in the education of many dental graduates who are now making noteworthy contributions in the treatment of cerebral palsied persons and in educating others in this important field.

This important new book including all aspects of dentistry for the cerebral palsied patient and for persons with other handicapping conditions represents a major effort in improving the dental health of these groups of handicapped children and adults. The author of the book has long been recognized as an excellent clinician and a resource person for information about dentistry for the handicapped.

The fact that in the past some cerebral palsied and other handicapped individuals have been denied adequate care may be related to the fact that the members of the dental team did not have an adequate understanding of the physical and mental capabilities of the patient. Fear of the unknown and unpredictable dental treatment situation can be overcome by reading this new book. There are frequent references to the fact that treatment goals can be reached for this special group of patients through the usual and customary dental techniques and procedures. There is, however, extensive material related to special treatment procedures for some patients. Procedures ranging from those performed under preoperative sedation to those completed under general anesthesia are described.

General dentists and those in all of the recognized specialties will benefit from reading this book and will subsequently be able to provide excellent treatment or referral services for handicapped patients.

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

*Professor of Pedodontics  
Dean of School of Dentistry  
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## PREFACE

DENTISTRY in cerebral palsy has become an important part of the treatment and habilitation of patients with cerebral palsy and the several related handicapping conditions that frequently accompany this neuromotor disorder. Probably in no other condition has the concept of the multidisciplinary effort been effected on such a broad scale to solve the problems of diagnosis, treatment, research, and habilitation. In many centers for diagnosis and treatment of the cerebral palsied, the dentist has become an essential member of the team because of the continuing need for his services and the resulting contribution to the patient's health and well-being.

We have progressed significantly from that early period when practically no dental care was available for the cerebral palsied; families with cerebral palsied children were unable, in most instances, to obtain necessary dental care, except for acute emergency situations. Today, in many areas in the United States and abroad, sufficient public interest has been aroused to help develop and support centers for treatment of these individuals and for research into the nature, causes, and prevention of the conditions. Dental service and prevention have become important parts of the total activity in an appreciable number of centers. Even in areas of the United States where such centers have not yet been developed, some dentists have become sufficiently motivated to take an interest in the dental problems of the cerebral palsied and have sought knowledge through short-term training courses and affiliation with nearby organizations for the cerebral palsied.

But the fact remains that there are still many regions where dental facilities and trained personnel are not available, and dental care cannot be obtained by the cerebral palsied, particularly those who are severely involved. In many cities, as well as many of the less densely populated regions of our country, the general practitioner is the one looked to by the families with cerebral palsied children. For all these areas, we must promote the interest of more dentists in the problems of the handicapped, so that as many as possible may be cared for in the offices of knowledgeable general practitioners, in addition to those treated by pedodontists and other specialists devoted to their welfare.

This volume is intended to describe fully dentistry's role in the team effort, to promote participation of more dentists in dentistry for the cerebral palsied, and to present sound principles and procedures for guidance in this



work. It includes principles, procedures, observations, and findings of clinical practice and studies developed during the course of twenty-five years of operation and expansion of a broad Cerebral Palsy Dental Program initiated in 1951. This program is devoted to the concept of complete dental care for patients with cerebral palsy and related conditions and to the training of dentists for this work.

A major result of the program has been the evidence that through such dental treatment based on sound principles, not only is good dental health attained and maintained, but it contributes as well to the normal "growing up" of the cerebral palsied child.

In addition to the major emphasis on dental considerations, portions of the book are devoted to neurological factors in cerebral palsy and related conditions, neuromotor signs of head and neck involvement, descriptions of accompanying conditions, and the advantages of the team approach. The importance of these factors has been confirmed repeatedly through the responses of dentists at regional meetings in various parts of the country.

I know this volume will be of considerable assistance to dentists who take care of patients with cerebral palsy and related handicapping conditions, need to understand the patients and their conditions, and wish to provide a complete and meaningful professional service.

S.N.R.

## ACKNOWLEDGMENTS

THE MANY references to the multidisciplinary nature of dentistry for patients with cerebral palsy and related handicapping conditions emphasize the close collaboration of professionals in several medical specialties. I am pleased to express my gratefulness for this to present and past members of the Departments of Neurology, Pediatrics, and Physical Medicine at the Columbia-Presbyterian Medical Center. Our own supervisors in the Cerebral Palsy Dental Clinic, initially, Doctors Robert L. Fisher and Arnold C. Rosenberg, and currently, Doctors Albert Green, Marvin B. King, Seymour Koster, Barbara B. Rocco, and Arnold Rosenberg, demonstrated constantly the validity of the concept of dentistry for the handicapped under normal conditions as expressed in this book. Doctor Edward F. Kilbane, Executive Secretary of the Dental Guidance Council for Cerebral Palsy was most cooperative in many matters on behalf of the Council and United Cerebral Palsy of New York City, Inc. I also thank Ms. Renee Lachman, Mrs. Winifred Magee, and my wife, Mrs. Beverly B. Rosenstein, for their cooperation in typing the many drafts and final manuscript, and Mrs. Ida Nathan for her help with photography for the illustrations. I am grateful, too, to Doctor Leon Sternfeld for his review and suggestions for Chapter 12, and to Doctor Chester Swinyard, editor of the American Lecture Series in Cerebral Palsy, and Mr. Payne Thomas, my publisher, for their cordial and helpful advice.

Because of their special training and abilities, I asked Doctor King and Doctor Koster to collaborate with me in the chapters on "Dental Care for Older Patients with Cerebral Palsy" and "Orthodontics in Cerebral Palsy," respectively, and Doctor Jerry J. Adelson to prepare the chapter on "The Use of General Anesthesia for Dental Treatment." Their ready cooperation is greatly appreciated, and their contributions add valuable material to this book.

S.N.R.

# CONTENTS

	<i>Page</i>
<i>Foreword, Ralph E. McDonald</i> .....	vii
<i>Preface</i> .....	ix

## Chapter

1. WHAT ARE THE ORAL AND RELATED PROBLEMS IN CEREBRAL PALSY? .	3
Oral problems: services needed, susceptibility to caries, soft tissues disorders, malocclusion; other oral disorders. Extraoral problems arising from cerebral palsy and related conditions: locomotion, stability, head control, communication disorders, mental retardation, seizures.	
2. GENERAL CONSIDERATIONS AND BASIC PRINCIPLES .....	14
Advantages of treatment under normal conditions, need for knowledge about cerebral palsy, related disabilities, behavior. Cerebral palsy defined, classifications. Related disabilities: types of speech disorders, hearing impairments, degrees of mental retardation, seizures, visual disorders.	
3. OROFACIAL CHANGES IN CEREBRAL PALSY AND THEIR RELATION TO ORAL MUSCLE INFLUENCE .....	23
Differences in early habit patterns, oral and facial sequelae of head and neck involvement, relation to imbalance of oral musculature.	
4. ORAL FUNCTIONAL AND NEUROLOGICAL INTERRELATIONSHIPS .....	32
Oropharyngeal function, positions of mandible, chewing and speech, grimacing. Neurological relationships, central nervous system, components, functions of cranial nerves. Neuromotor interrelationships, with emphasis on impaired muscle control in head and neck involvement and related innervation.	
5. ESSENTIAL CONSIDERATIONS FOR LOCATION AND ARRANGEMENTS FOR A DENTAL OFFICE FOR THE HANDICAPPED .....	52
External requirements: location, transportation, ramps. Internal requirements: access, comfort, equipment, instruments, supporters.	

<i>Chapter</i>	<i>Page</i>
6. DENTAL TREATMENT PLANNING AND PROCEDURES FOR THE HANDICAPPED	62
Need for patient's medical history: factors in behavioral management, the first visit, dentist's attitude, response. Management of patients with related handicapping conditions. History taking, first visit procedures, role of the parents, auxiliary personnel. Treatment planning procedures, x-ray survey; total preventive dentistry: oral hygiene, special tooth brushing, relation to eating habits and nutritional needs. Operative and restorative procedures, need for high standards of quality, special considerations, pulp management, oral assistive devices.	
7. PREOPERATIVE SEDATION FOR DENTAL TREATMENT IN CEREBRAL PALSY	84
Limited indications for use, purposes, precautions; methods of administration: oral, injection, relative analgesia. Indications for specific agents based upon types of resistiveness: medications recommended, their functions and dosages; other agents.	
8. ORTHODONTICS IN CEREBRAL PALSY	95
<i>Seymour Koster and Solomon N. Rosenstein</i> Orofacial changes in head and neck involvement in cerebral palsy that require orthodontic intervention. Procedures for evaluation of malocclusion and the signs of the neuromotor and accompanying disorders. Indications for preventive and total orthodontic therapy. Types of treatment, positioners, retainers; case report.	
9. DENTAL CARE FOR OLDER PATIENTS WITH CEREBRAL PALSY	111
<i>Marvin B. King and Solomon N. Rosenstein</i> Need for dental care, significance to older patients. Need to understand psychological background of older patients and relation to mental ability; anxieties and aging; dentist's attitude. Procedures for diagnosis, planning and treatment; home care for prostheses. Case reports.	
10. THE USE OF GENERAL ANESTHESIA FOR DENTAL TREATMENT	129
<i>Jerry J. Adelson</i> Indications for its use; administration on ambulatory basis in specially equipped private office, and the inpatient basis in a hospital. Consultation visit for complete evaluation, diagnosis, and thorough physical examination; treatment visit. Premedication, comedication, inhalation agents and administration; precautions; after-care.	

<i>Chapter</i>	<i>Page</i>
11. DENTAL DEVELOPMENTAL ABNORMALITIES IN CEREBRAL PALSY . . . . .	134
Susceptibility of dental development in cerebral palsy; etiological factors, dental developmental factors in primary dentition, anoxia, prematurity. Abnormalities in enamel formation, dentine formation, neonatal lines, morphology, eruption.	
12. DENTAL NEEDS IN THE COMMUNITY AND ORGANIZATION OF PROGRAMS	143
Need for programs for complete dental care, including preventive dentistry; surveys. Initial efforts by interested dentists working with parents' groups; formation of local Dental Guidance Councils. Promoting programs at dental societies, hospitals, dental schools.	
<i>Author Index</i> . . . . .	155
<i>Subject Index</i> . . . . .	157

**DENTISTRY IN CEREBRAL PALSY  
AND RELATED  
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## WHAT ARE THE ORAL AND RELATED PROBLEMS IN CEREBRAL PALSY?

---

**I**N PROVIDING dental care for patients with cerebral palsy, it soon becomes obvious that two distinct groups of problems exist.

One group consists of the several dental and oral problems present in and about the oral cavity. The second is a number of nondental and extra-oral problems arising from the cerebral palsy and accompanying conditions. These latter problems, though extraoral in their origin and manifestations, influence our approach to management in the dental office; they are related to locomotion, positional stability, and the ability to comprehend and communicate. All of these factors exert a strong influence on management of cerebral palsied patients in the dental situation.

The problems in both groups must be understood and solved, in order to attain good rapport in the dental office and to accomplish desired results in terms of complete dental care of the highest quality. The specific problems in both groups will be described in detail.

### ORAL PROBLEMS

In regard to the nature of the dental services required for children with cerebral palsy, they are similar, to a certain extent, to the services required for other children, i.e. they require x-rays and diagnosis, prophylaxes, extractions, and fillings; some may need appliances for space management. A fairly high proportion of the older children, particularly athetoids, require orthodontic treatment; a smaller percentage requires anterior permanent replacements, sometimes on root canal filled teeth. An obvious lack of home care oral hygiene measures indicates the need for intensive instruction in home care procedures suited to the individual's ability to perform.

Among older cerebral palsied patients, periodontal treatments and prosthetic appliances, both fixed and removable, are more frequently required, as their mouths frequently show evidence of dental neglect and past inability to obtain dental care. These situations affirm the need for greater emphasis on preventive dentistry procedures for all these patients.

To limit our description to this recounting of dental services and procedures required is oversimplifying the situation and unjust to these



patients, because upon further investigation, we find that marked differences exist between the oral problems of cerebral palsy patients (and their management) and oral problems of other patients.

Degree of susceptibility to dental and oral disorders varies greatly among cerebral palsied patients. Comparison of the prevalence of dental disease, disorders of the oral soft tissues, and disorders of the occlusion in cerebral palsied groups and groups of normal individuals leads to interesting and important conclusions. In general, we find that these children are susceptible to the same dental and oral diseases and disorders as are other children, but there is a greater degree of susceptibility to disorders of the supporting structures and occlusion than in normal children.

### Caries

Observations of many children with cerebral palsy disclose a wide range in extent of carious involvement. While there are many cerebral palsied patients with extensive involvement because of severely decayed teeth and missing teeth, there are others who appear to have average incidence of decay and several with dentitions free or almost free from decay (Fig. 1-1A and B).

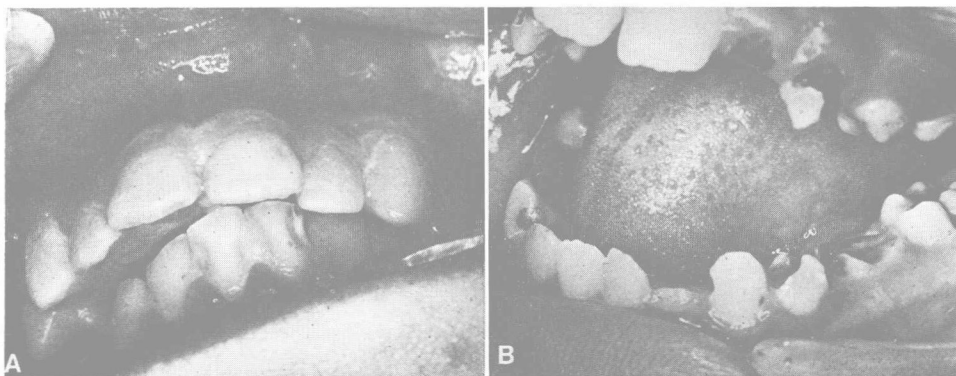


Figure 1-1 A and B. Caries. (A) Male, thirteen years old, with generalized athetosis, showing moderately extensive caries involving lower anterior teeth; upper anterior teeth have interproximal surface fillings. Early mild marginal gingivitis is also present. (B) Male, nine years old, spastic, extensive caries with involvement of permanent molars and severe destruction of primary molars and upper anterior primary teeth.

Such variety of observations led to surveys of groups of children with cerebral palsy so that DMF\* values could be ascertained and used for com-

\*DMF is the index of total decay experience and includes the decayed, missing, and filled teeth. As an index, it is used for large groups, and the mean values for the group are developed after the DMF values are obtained for each individual in the group.