

Symposium: Contributions of Governmental Agencies in Research Treatment, and Teaching of the Oro-Facial-Speech Handicapped

I. Support of Research in Cleft Palate from the National Institute of Dental Research

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Appreciating, as we do, the fact that there is assembled here today a membership of an association that has devoted its collective professional life to the study of the cleft palate problem and its associated disorders, it would seem quite needless for me to make the usual gracious but hollow sounding introduction telling you what you already know—how important is your field of responsibility. More to the point is the evidence you now have to be assured that the National Institutes of Health, as a research organization of the government, accepts a major responsibility for furthering your programs in the national interest. Furthering them, I should emphasize, in a supporting role and not a directing one. While your individual pilgrimages down through the years of dedicated and sacrificing service to society and to your several professions have possibly brought you only a small measure of satisfaction in creating an understanding of the true magnitude of the cleft palate problem, there is today good reason for optimism. Society and the allied health sciences have come to know that cleft palate is a malformation that affects not only the child himself, but all around him. In early life, his problems may be those of getting sufficient nourishment to be able to survive and of gaining social acceptance both at home and at school. In later life his problem may be one of adequacy of communication—ability to speak and hear as others do. Throughout his life he feels ‘different’ and his psychological world is a more or less maladjusted one.

For many years, progress in the field of cleft palate rehabilitation was restricted to surgical development and the surgeon improved his techniques to a remarkable extent. He established new and better methods of operating so that the ‘before and after’ pictures presented a more favor-

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able contrast as the years went by. Unfortunately, the basic problem still remained with us. In a great many cases the handsome surgical result appeared fine indeed, only to break down later in life, leaving the patient with other problems.

Research, therefore, has had to look to a more total picture. While a cleft can usually be repaired by surgery or prosthesis, either alone or in combination, we have come to realize that consideration must also be given to speech, hearing, pharyngeal function, and rehabilitation as necessary parts of any research effort. And perhaps even more important is the basic research which must seek the answers to the causes of cleft palate and the means of preventing this anomaly. Studies in this field are of comparatively recent origin.

How is the National Institute of Dental Research able to contribute to your efforts? Dental research at the National Institutes of Health began in the early 1930's, but it was not until 1948 that an act of Congress established the Dental Institute. In its beginning, it had an appropriation of approximately half a million dollars. This budget to administer a national program has steadily grown, until today it approximates 19 million dollars, with roughly one-fifth allocated for support of intramural research in Bethesda and some four-fifths expended in grants to universities and other institutions for research and training. While the grants for research have covered a wide range of efforts in many disciplines bearing on the problems of dentistry, it was just three years ago, upon advice of the National Advisory Dental Research Council, that the Institute launched a large-scale effort to intensify research efforts in the cleft palate field. In this new scope of responsibility, the Institute has encouraged scientists to develop proposals of expanded research programs using newer methods of approach. As definitive ideas emerged from what the investigators proposed to do, the kinds of disciplines they proposed to enlist, the funds that would be required, and the apparatus and equipment that would be necessary to do the job—the objectives which were hopefully envisaged at the outset of the total program began to show a pattern of purposeful direction.

Following the fine example set by the Lancaster Cleft Palate Clinic under our good friend Dr. Herbert Cooper, we began to look into ways of setting up multidisciplinary centers—not just to treat the patient, but to carry on research. This meant establishing teams comprised of clinicians and laboratory investigators representing a variety of specialized disciplines. In one such multidisciplinary program established at New York University, the approach has been to emphasize the functional activity of the cleft palate patient and his therapeutic management. Included in this program has been a study of speech and swallowing mechanisms as analyzed by cineradiography, as well as the incorporation of a broad spectrum of other disciplines ranging from embryology and genetics to the social sciences.

During the past year, three additional research centers have been established. At the State University of Iowa, the efficiency of commonly used diagnostic procedures is being evaluated. Facets of the program include surgical and dental management; hearing, speech and language assessments; and research on the physiology and anatomy of normal and cleft palates.

At the Eastman Dental Dispensary in Rochester, a new program has been designed to develop surgical techniques for the prevention of speech difficulties. In determining the physiological and physical characteristics of the production of speech sounds, factors such as movements of the velum and tongue are being studied for their effect upon the passage of air and sound energy through the vocal tract; in total perspective, a study of normal speech accompanied by research in surgical management.

At the University of Illinois, longitudinal growth studies are under way to determine the patterns of growth variation of the head and face as influenced by a variety of congenital anomalies and to analyze the effects of various types of treatment.

Within the past few months we have made awards to the University of Pittsburgh and to Duke University for other multidisciplinary programs which are just now getting under way. At Pittsburgh the program is designed to emphasize experimental surgery and longitudinal studies of the growth and development of the skeletal structures with attention also to be given to the hearing profile and other otological problems, as well as to speech, language, and emotional development of the cleft palate patient. At Duke, the emphasis will be on rehabilitation, with the ultimate goal of standardizing methods of treatment by means of long range investigations into mental and emotional development. Here too, a speech study will evaluate the effectiveness of various types of bone grafts and the development of the premaxillary, maxillary, and palatal areas.

The significant element of all these large-scale programs is the coordinated effort of surgeons, speech therapists, orthodontists, prosthodontists, pediatricians, psychologists, social workers, and basic scientists—operating as a team to observe, record, and evaluate many kinds of data essential to the furtherance of knowledge in the cleft palate field.

In addition to the multidisciplinary programs, there are many individual research projects supported by the Institute in which there is participation of one or more investigators to pursue a special goal or develop a special technique. While not practicable to list all of these because of their great range and number, perhaps a few examples would be in order: a) a project to establish the rates and patterns of normal palatal development and compare them with development in the cleft palate subject; b) a study of occlusion employing electromyographic techniques which will contribute further to our knowledge of facial and jaw muscle growth patterns; c) the utilization of metallic implant techniques to

investigate growth activity at specific anatomic centers during facial development and to make detailed studies of tooth movement during eruption; d) audiometric studies to show the extent of hearing difficulties associated with the age of the cleft palate patient and the age when surgical correction was attempted or accomplished; e) experimental studies to evaluate the influence of prenatal factors in the etiology of clefts and thereby contribute needed additional information on the interplay of environmental, biochemical, and genetic factors; f) studies utilizing radioisotope techniques, bone density measurements, and mechanical engineering approaches to throw new light on various facets of the cleft palate problems; and g) studies of velopharyngeal motion and function, tongue and hyoid behavior, and the dynamics of speech articulation.

You will have noted perhaps that my references have been limited to ongoing projects and that relatively little may thus be reportable in the way of research results. Many of our grants have been made only in the course of the past year and many investigators are still in the process of mobilizing research teams, securing equipment, and setting up protocols for their studies. And then too, in a great many cases, baseline data have to be obtained before a research experiment can begin. It would seem apparent then that the granting of one and one half million dollars this year for so monumental a task as cleft palate research affords little reason for contentment or assumption that the fullest measure of competent effort is being contributed. You will be interested in learning, however, that an expenditure of over two million dollars is planned for the next fiscal year. We hope that a large percentage of this increase will be devoted to basic studies in the genetics, embryology, and physiology of cleft palate because it is in these fundamental areas that future important gains would seem to lie.

The team efforts represented in many of the referred to projects are symbolic of the increased cooperation so necessary to the needs of dental research. These efforts are evidence that dental research is reaching maturity and that specialization does not mean isolation. Because what we know about dental research is so little compared with what we need to know, our future is limited only by our narrowness of vision. At the same time, we must find ways of applying what we know with greater force and effectiveness. The projects I have mentioned, will, I believe, give impetus to investigations in other broadening fields of biological science in the expanding world of dental research. They are in one sense a milestone in the integration of medical and dental knowledge to greater purposes for the benefit of man everywhere.

In a way, the development of research in cleft palate parallels the research experience and development in the country as a whole. We invariably start with programs of service and end with programs of prevention. We start with acute conditions and find our way into handling chronic ones. The growth of the National Institutes of Health has been a

striking example of this phenomenon during the post-war era. As Dr. Shannon, the Director of the National Institutes of Health, has pointed out, we have witnessed a shift in the center of concern in health research from the infectious to the chronic diseases, and from categorical disease entities to broadened responsibility for underlying scientific development.

May I emphasize that the health of man is indivisible and that the professions which seek to advance it are, basically, inseparable. If they are to succeed, they must constantly reinforce each other. Having watched the emergence of the tremendous capability represented in the team effort to treat the whole problem of cleft palate, dentistry—in common with its fellow health professions—can now look to a stimulating future. As a professional group, you are responsible for and capable of delivering more than ever before; inevitably, you will be asked to deliver more. It has been said that “If a man has a talent and cannot use it, he has failed. If he has a talent and uses only half of it, he has partly failed. If he has a talent and learns somehow to use the whole of it, he has gloriously succeeded and won a satisfaction and a triumph few men ever know”.

Let the years ahead see the ultimate use of your talents and may you gloriously succeed in your ventures.

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