

WTR# 419

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DEPARTMENT OF THE AIR FORCE
WILFORD HALL USAF HOSPITAL
LACKLAND AFB, TEXAS

24 August 1966

REPLY TO
ATTN OF: WHD

SUBJECT: Research Proposal

TO: Commander (WHG)

1. Title. Serial Investigations of a Variety of Congenital Deformities of the Brain Case and Facial Skeleton; and the Response to Treatment.

2. Purpose. With the aid of cephalometric roentgenography, the study of abnormal patterns of growth and development (skull) in infants and small children will enable the orthodontist to more accurately discern proper diagnosis and subsequent treatment. It is the intent of this study to treat 100 infants with cleft lip and palate defects and compare with 100 normal infants. The main concern of this study is the growth and development of these children. The Departments of Pediatrics and Plastic Surgery will have direct interests. These departments will be made privy to all pertinent data evolving from this study. It is hoped that the results of this study will be the basis for a sorely needed, concrete guidance system; first for prognostication of an infant's future growth pattern, secondly to establish a plan of direction which can be given to parents when such abnormalities or deformities are discovered.

3. Bibliography.

a. Brodie, A.G., "On the Growth Pattern of the Human Head from the Third Month to the Eighth Year of Life," American J. of Anat. 68:209-269, 1941.

b. Pruzansky, Sam and Lis, E.F., "Cephalometric Roentgenography of Infants, Sedation, Instrumentation and Research," Am. J. Orth. 44:159-186, 1918.

c. Pruzansky, S., "Serial Growth Studies of Newborns with Cleft Lip and Palate at the University of Illinois," Newsletter Am. Assoc. for Cleft Palate Rehabilitation 3:24, Jan 1953.

d. Barber, T.K., Pruzansky, S., Lauterstein, A. and Kindelsperger, R., "Application of Roentgenographic Cephalometry in Pedodontic Research," J. Den. Child. 27:97, 1960.

e. Coccaro, P.J., Subtelny, J.D. and Pruzansky, S., "Growth of the Soft Palate in Cleft Palate Children. A Serial Cephalometric Study," Plastic & Recon. Surg. 30:43-55, July 1962.

4. Technical Approach.

a. An infant cephalometer will be used to obtain serial radiographs of infant patients over a period of three years with the head being oriented in the same plane each time.

b. Tracings will then be obtained from original radiographs and subsequent tracings will then be superimposed on the original and thus indicate the direction and rate of growth and development which the skull and facial structures are taking over this period of time.

c. These tracings can be used as an aid to gain an indication of the pattern of the development. In order to gain more precise information, fifteen different quantitative measurements will be made on each tracing. These standard roentgenographic measurements include both linear and angular assessments.

d. The data will be primarily concerned with infants suffering the same deformity (cleft palate) and who will be treated basically the same way at the same time of development.

5. Equipment Needed. The infant cephalometer, complete with 2 x-ray generators for lateral and P.A. radiographs; x-ray heads, self-rectifying, self-contained, with an output of 30 MA and 100 KV autotransformer control with synchro-timer mounted to a mobil protective screen. Price \$3875.00. Source: B.F. Wehmer X-Ray Specialties, 740 Old Dobbin Road, Lexington, Kentucky 40502.

a. Cephalometer to be housed in Radiology Department (film and cassettes will be furnished by Radiology and all exposures and processing will be performed by Radiology). Coordination has been confirmed through Col Robert Kurth.

6. Schedule. To commence upon arrival of cephalometer; duration, 3 years.

7. Experimental Subjects. Referrals from Departments of Orthodontics, Pediatrics, Plastic Surgery.

8. Principal Investigator - Haskell Gruber, Lt Colonel, USAF, DC
Chief, Orthodontic Section

Associate Investigator - Robert J. Kurth, Colonel, USAF, MC
Chairman, Department of Radiology