NUTRITIONAL OUTCOME OF INFANTS WITH CLEFT PALATE DURING THE FIRST 18 MONTHS OF LIFE: A PROSPECTIVE, RANDOMIZED STUDY OF TWO FEEDING METHODS

by

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ABSTRACT

Brine, Elizabeth, A., M.M.Sc, Indiana University School of Medicine, June 1991. Nutritional outcome of infants with cleft palate during the first 18 months of life: A prospective randomized study of two feeding methods. Major professor: Karyl A. Rickard, Ph.D.

Infants with cleft palate are reported to experience difficulty in feeding and achieving satisfactory growth; however, specific data that relate feeding technique and caloric intake to growth are unavailable. The primary objective of the study was to compare the efficacy of two feeding methods advocated for infants with cleft palate: (1) a squeezable plastic container with a narrow, long crosscut nipple that allows formula to be squeezed into the pharyx (cleft palate nurser); and (2) a standard nipple with a crosscut that allows the infant to obtain formula with minimal sucking effort (crosscut nipple). A secondary objective was to determine impact of feeding difficulties upon growth and nutritional outcome of infants with cleft palate when early, consistent nutritional guidance and intervention are provided. Thirty-one nourished infants were randomized at a median age of 15 days to 1 of 2 feeding methods (18 infants, cleft palate nurser; 13 infants, crosscut nipple) within sex (21 males, 10 females) and palatal defect (22 cleft lip/palate [CL/P], 9 isolated cleft palate [CP]) categories. Infants with Pierre Robin sequence or other malformation syndromes were excluded. The feeding/

nutrition protocol included feeding technique instructions, nutritional counseling at each visit, the same 20 kcal/oz standard formula through 12 months and introduction of infant and soft table foods at 6 months. Growth data at entry, 3, 6, 9, 12 and 18 months (extrapolated to the exact age in days) and four day food records at 3 and 6 months were obtained. Serum proteins and zinc were obtained prior to the three operative procedures for infants with CL/P (cheiloplasty: 3-4 months; alveolar bone grafting: 6-9 months; palatoplasty: 12-18 months). The mean $\pm$ SEM energy intakes (percent Beal's data for healthy children) for the two feeding methods were not significantly different (cleft palate nurser: 3 months - 108 $\pm$ 7, 6 months - 113 $\pm$ 6; crosscut nipple: 3 months - 101 $\pm$ 4, 6 months - 105 $\pm$ 6). Growth measurements of the two groups of infants (within sex categories) were not significantly different during the first 18 months of life (weight gain, $p = 0.73$; weight, $p = 0.21$; length, $p = 0.07$; head circumference, $p = 0.18$; triceps and subscapular skinfold measurements, $p = 0.47$ and 0.48; and mid-arm circumference [MAC], $p = 0.77$). Since growth response of the infants in the two feeding method groups did not significantly differ, data were combined and reanalyzed to document differences related to palatal defect (CL/P vs isolated CP). The palatal groups significantly differed in head circumference ($p = 0.01$) but not in energy intakes ($p = 0.35$) and other growth measures within sex

categories (weight gain per day, $p = 0.08$; weight, $p = 0.08$; length, $p = 0.13$; triceps and subscapular thicknesses, $p = 0.64$ and $p = 0.96$; and MAC, $p = 0.94$). Mean head circumferences for both sexes were at the 50th or between the 50th and 75th percentiles for healthy children; however, head circumferences for infants with isolated CP were larger than those for infants with CL/P. Mean lengths and weights for both sexes were at or below the 50th percentile; infants with isolated CP were closer to the 50th percentile than those with CL/P. In infants with CL/P, the mean ($\pm$ SEM) albumin (3.9 ± 0.1 to 4.1 ± 0.1 g/dl), transferrin (251 ± 8.6 to 292 ± 15.3 mg/dl), prealbumin (16 ± 0.9 to 19 ± 1.1 mg/dl) and zinc (68 ± 2.6 to 72 ± 4.6 ug/dl) concentrations were within the normal range; retinol binding protein (2.6 ± 0.1 to 3.4 ± 0.2 mg/dl) concentrations were lower. In conclusion, infants with clefts fed with a cleft palate nurser compared to a crosscut nipple did not significantly differ in energy intakes nor growth. The nutritional and overall growth outcome was remarkably good despite the fact that these infants are at high risk for failure to thrive secondary to feeding difficulties related to cleft palate. Growth outcome appeared to be more dependent upon a consistent, comprehensive nutrition program than upon method of feeding.

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