Complementary Feeds in Ex-Premature Infants

Premature infants are a diverse population whose nutritional needs, developmental maturity, and long-term outcomes are different from those of term infants. Introduction of complementary feeds is a critical step in the advancement of feeding in preterm infants to avoid growth delay and important nutrient deficiencies. Developmental readiness rather than chronological age should be considered as an important factor to introduce complementary feeds.

Premature infants (23–37 weeks) are a special group of the population whose nutritional requirements are different from those of term infants, especially for energy, protein, long-chain polyunsaturated fatty acids, iron, zinc, calcium, and selenium. Optimal nutritional intake is very important in these infants from birth until infancy to provide appropriate growth, especially head growth, which may have an impact on the long-term neurodevelopmental outcome and linear growth. Associated comorbidities such as feeding problems, gastrointestinal reflux, and respiratory compromise may delay the introduction of complementary foods in premature infants.

The American Academy of Pediatrics (AAP) and the World Health Organization recommend exclusive breastfeeding for the first 6 months of age, with the introduction of complementary foods and continued breastfeeding thereafter, and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition recommends the introduction of complementary foods no earlier than 4 months and no later than 6 months of age [3–5]. There are no specific guidelines for preterm infants. The AAP recommends the introduction of solid foods based on developmental readiness, which is usually achieved at 4–6 months of age [6]. Studies suggest that preterm infants are significantly more likely to be introduced to solid food earlier than term infants [2].

Early introduction of complementary foods has been linked to rapid weight gain, obesity, diabetes mellitus, allergies, and atopic disease. Nevertheless, late introduction of complementary foods may lead to inadequate nutritional status and compromised immune development [7–10]. The selection of complementary foods should be based on the preterm infant’s need for balanced energy source from protein, carbohydrate, and fat, especially long-chain polyunsaturated fatty acids, iron, and zinc. The common practice in the United States is to introduce iron-fortified cereals, followed by fruits or vegetables, with later introduction of meat [1]. Signs of developmental readiness for solid foods in infants are a reduced tongue thrust reflex and the ability to hold the head up well, to sit in a stable supported position, to open the mouth, and to lean forward towards the spoon [8]. Parents should choose a first food that provides the required nutrients and also helps meeting energy requirements. Solid foods should not be introduced before 6 months of age as gross motor development of infants, especially head control, is very important to safely introduce solid foods [1].

Parents should introduce one ‘single-ingredient’ new food at a time and should not introduce other new foods for at least 3–5 days. By 7–8 months of age, infants should be consuming foods from all food groups. Whole cow’s milk should not be introduced until 12 months of age, and fruit juice should not be offered before 6 months and its intake after that should be limited. Foods rich in zinc and iron should be included in complementary foods such as red meat, pork, and poultry [11]. The AAP encourages the consumption of meats, vegetables with higher iron content, and iron-fortified cereals for infants and toddlers between 6 and 24 months of age [1]. Parents should prepare homemade complementary foods in a safe and healthy manner.

The literature suggests that, given the lack of consensus and insufficient evidence, the decision to introduce preterm infants to solids/complementary foods should be made on an individual basis, considering postmenstrual age, nutritional status and requirement, and developmental readiness, especially motor development [7–11].

Key Messages
Premature infants are a diverse population whose nutritional needs, developmental maturity, and long-term outcomes are different from those of term infants. Introduction of complementary feeds is a critical step in the advancement of feeding in preterm infants to avoid growth delay and important nutrient deficiencies. Developmental readiness rather than chronological age should be considered as an important factor to introduce complementary feeds.

References:

Fig. 1. Adapted from Palmer and Makrides [8].