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Multidisciplinary early care in a newborn with palatolabioschisis: Emphasizing feeding intervention and surgical planning

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Abstract

Palatolabioschisis (cleft lip and palate) is a common congenital craniofacial anomaly, occurring in approximately 1 in 700 live births worldwide and seen frequently in Indonesia. Early multidisciplinary care is essential to support feeding, growth, and preparation for surgical repair.A term female newborn was delivered spontaneously at 40–41 weeks with isolated palatolabioschisis and was clinically stable. Standard neonatal care included thermoregulation, vitamin K, eye prophylaxis, and airway monitoring. Parents received education on safe feeding using a specialized bottle to minimize aspiration risk. A staged surgical plan for cheiloplasty and palatoplasty was arranged.Early stabilization, safe feeding strategies, and timely multidisciplinary referral contribute to optimal growth and successful surgical outcomes in newborns with palatolabioschisis, particularly in high-prevalence regions such as Indonesia.

Keywords: Palatolabioschisis, Cleft lip and palate, Newborn, Stabilization, Surgical planning

Introduction

Cleft lip and palate (palatolabioschisis) represent one of the most common congenital craniofacial anomalies worldwide. Clefts of the lip and palate are generally divided into two groups, isolated cleft palate and cleft lip with or without cleft palate, representing a heterogeneous group of disorders affecting the lips and oral cavity. These defects arise in about 1.7 per 1000 liveborn babies, with ethnic and geographic variation. [1] These observations suggest the relative contribution of individual susceptibility genes may vary across different populations. The frequency of CLP also differs by sex and laterality: there is a 2:1 male to female ratio for clefts involving the lip and approximately a 1:2 male to female ratio for clefts of the palate only; and there is a 2:1 ratio of left to right sided clefts among unilateral cleft lip cases.[2] Globally, the estimated prevalence is approximately 1 in 700 live births, with variations depending on geographic region and ethnic background. In Asia, particularly Southeast Asia, the prevalence is reported to be among the highest in the world, ranging from 1 in 500 to 1 in 1,000 live births.[3]

According to the Indonesian Basic Health Research, the national prevalence rate of cleft lip and palate increased from 0.08% in 2013 to 0.12% in 2018 with an estimated 7,500 new cases annually. [4] Data from Bandung Cleft Lip and Palate Center reported 3,618 patients between 2007 and 2021, reflecting both the burden of disease and the growing capacity for diagnosis and treatment in the country. The mean age was 4.33 years, and the median age was 1.35 years. Males predominated over females in all cleft types (60.4%), and the cleft lip was on the left side in 1,677 patients (46.4%). Most cases were unilateral (2,531; 70.0%) and complete (2,349; 64.9%), and involved a diagnosis of cleft lip and palate (1,981; 54.8%). [5]
Cleft lip with or without cleft palate is the most occurring craniofacial anomaly in human, resulting from a complex etiology involving multiple genetic and environmental factors. Orofacial clefts can present as cleft lip alone, cleft palate alone, or a combination of cleft lip and palate. Among these, combined cleft lip and palate is often more complex, posing greater challenges in airway protection, feeding, and early stabilization. [6] Infants with palatolabioschisis face multiple medical and developmental challenges starting immediately after birth. The inability to generate negative intraoral pressure due to the cleft results in feeding difficulties,

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prolonged feeding time, nasal regurgitation, and increased risk of choking and aspiration, which can lead to recurrent respiratory infections and poor weight gain.[7] Nutritional problems are among the most critical issues in this group, as suboptimal caloric intake and inefficient feeding may lead to growth failure, delayed surgical eligibility, and increased postoperative complications.[8] Children born with cleft lip and palate or isolated cleft palate are best managed by a multidisciplinary team that typically includes a plastic surgeon, otolaryngologist, oral surgeon, orthodontist, pediatric dentist, audiologist, speech therapist, social worker, psychologist and cleft team nurse.[9] These interventions not only prevent complications but also reduce parental anxiety and improve bonding and caregiving confidence. [10,36] Malnutrition and underweight remain significant barriers to early cleft surgery in many low- and middle-income countries, including Indonesia.[11] potential outcomes for comparing cleft lip and palate treatment have been reported, including dentofacial growth and development, facial appearance, speech, hearing, nasal breathing, quality of life, and patient satisfaction.[12] This case report highlights the importance of early stabilization and nutritional strategies in a term newborn with palatolabioschisis in Indonesia, a country with high prevalence. The report also emphasizes the role of multidisciplinary care, parental education, and timely surgical planning in improving outcomes. [12,13,14]

Case 1

A male neonate was born at a midwifery clinic on July 3, 2025, at 08:30 WIB, gestational age 41 weeks, birth weight 2500 g. The infant cried immediately after birth. Apgar scores were 7 and 8 at 1 and 5 minutes. There was meconium-stained amniotic fluid.

Physical examination revealed cleft lip and palate with a communication between nasal and oral cavities. Respiratory rate was 65 breaths/min, SpO_2 92% on room air, improving to 99% with nasal CPAP (PEEP 5 cmH_2O, flow 5 L/min). OGT was inserted for feeding. Thermoregulation was maintained, and the infant was admitted to the neonatal unit for observation and nutritional support.

Picture 1

Case 2

A female neonate, birth weight 2500 g, gestational age 40 weeks, was born on October 23, 2025, at 02:00 WIB. Apgar scores were 7–8. The baby was clinically stable with no respiratory distress. Physical examination revealed isolated cleft lip and palate without additional anomalies. Vital signs were normal. Routine thermoregulation and OGT feeding were initiated to prevent aspiration. No respiratory support was required.

Picture 2

Discussion

Optimal care for infants with CLP requires a multidisciplinary team that includes neonatologists or pediatricians, plastic and reconstructive surgeons, otolaryngologists, nutritionists, speech and language therapists, orthodontists, geneticists, audiologists, and pediatric cardiologists when indicated . Ideally, this team also involves specialist nurses, clinic coordinators, psychologists, and social workers to provide holistic support for both the patient and the family. The establishment of such a team is

recommended to be supported by a referral volume of at least 30 new cases per year, which ensures maintenance of clinical expertise, development of structured treatment protocols, and systematic audit of outcomes. A structured team approach improves feeding outcomes, surgical results, speech development, and long-term quality of life. Therefore, early referral to specialized cleft centers with a fully established multidisciplinary team is strongly recommended. [15,16]

Immediate management of newborns with CLP begins in the delivery room and early neonatal period. The priority is airway stabilization, temperature regulation, and ensuring adequate oxygenation. Infants with airway compromise or respiratory distress, such as in Case 1 and Case 2, may benefit from non-invasive respiratory support. In our series, CPAP was used in Case 1. These interventions are effective in maintaining oxygenation and avoiding intubation in most cases. [17,18] Feeding support is another critical component of early management. Because of abnormal oral anatomy and inability to generate negative pressure, orogastric tube (OGT) feeding was used in all three cases. This allows safe and controlled administration of breast milk or formula while minimizing the risk of aspiration.[8,18]

Recommended neonatal screening in infants with CLP includes:

- Echocardiography for congenital heart disease, Congenital heart disease is the most commonly associated disease with oral cleft. Cleft lip and palate has a frequency of 1 per 700 live births, making it among the most prevalent orofacial congenital anomalies of the craniofacial region.[19]
- Newborn hearing screening (OAE/ABR) due to high risk of otitis media and hearing loss. Newborns with cleft palate are at higher risk of failing their newborn hearing screen compared with healthy neonates. [20,21]
- Genetic evaluation if dysmorphic features are present. Orofacial clefts, notably Cleft Lip (CL) and Cleft Palate (CP), are the most common craniofacial birth defects in humans and represent a substantial personal and societal burden. Clefts affect approximately 1 in 700 individuals.[22,23]

Babies born with a cleft may present with a variety of feeding problems as they do not form an homogenous feeding group. Poor growth and difficulties in oral feeding may cause parents an increase in anxiety and affect their ability to adjust and modify their skills to meet the additional needs of their infant.[18] Maternal choice of feeding must be respected and accommodated in the development of a feeding plan, but it is important that parents are given help to make the necessary adjustments. The feeding difficulties associated with an isolated cleft lip or cleft lip and palate can usually be resolved in the early neonatal period and these babies can be safely nursed with their mothers on the postnatal wards. Babies born with a cleft palate, without a cleft lip sometimes present with a more complicated picture which may continue to cause difficulties for many months. For this reason, it is important to consider the management of these two cleft types in the first postnatal year separately.[18,24] Do not have a major problem with feeding, need some modifications in positioning during feed. If cleft is unilateral, use of modified football method or straddle position. Breastfeeding is possible for many infants born with cleft lip and/or palate, but its success depends on several factors, including the type and severity of the cleft, the baby's ability to generate suction, and maternal positioning techniques. Early support from a Lactation Consultant (IBCLC) and a multidisciplinary cleft care team significantly increases the likelihood of successful feeding outcomes. [25,26]

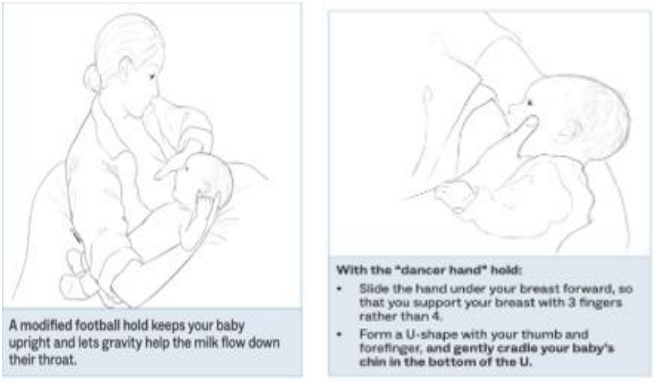

Figure 1. Breastfeeding positions for infants with cleft lip and/or palate

A modified football hold (left) allows the infant to be positioned in a semi-upright manner, enabling gravity to assist milk flow and reduce the risk of nasal regurgitation or aspiration. The dancer hand hold

(right) provides These techniques help optimize latch and milk transfer in infants with cleft lip and/or palate. Resource Intermountain Health. (2024). Breastfeeding: Unrepaired cleft lip or cleft palate. Intermountain Health. Retrieved from https://intermountainhealthcare.org/

In Case 1, the infant presented with cleft lip and palate but was clinically stable after respiratory support with CPAP. Once stable, this patient was a suitable candidate for attempting direct breastfeeding using these supportive positioning techniques. Early introduction of these methods may help improve feeding efficiency and maternal-infant bonding.

In Case 2, the infant with isolated cleft lip and palate was clinically stable and did not require respiratory support. This made the patient an ideal candidate for direct breastfeeding with the modified football hold and dancer hand hold techniques. These positions can facilitate an effective latch and efficient feeding, potentially reducing the need for prolonged OGT use.

In most cases, infants with cleft lip and/or palate may have difficulty breastfeeding effectively, although breastfeeding can always be attempted. If breastfeeding alone does not provide sufficient intake, bottle feeding with specially designed feeding systems may be required. [27]

Figure 2. Equipment commonly used in feeding infants with cleft lip and/or palate

These specialized feeding devices allow controlled milk delivery and are particularly useful for infants who cannot generate adequate negative pressure during feeding. Source Bannister, P. (2008). Management of infants born with a cleft lip and palate. Part 2. Infant, 4(4), 138–142.

Adequate growth is crucial to prepare the infant for surgical intervention. Malnutrition or failure to thrive can delay surgery and worsen postoperative outcomes. Feeding in neonates with clefts can be challenging; faltering growth is frequently observed. [29] Precise timing can vary from country to country and cleft center to cleft center, but several common goals guide treatment. Surgical repair is a major component of CLP management. [30] The optimal timing depends on the infant's age, weight, and overall health. According to widely accepted criteria, lip repair (cheiloplasty) is ideally performed at around 3 months of age, following the "rule of 10" (10 weeks of age, 10 pounds of weight, 10 g/dL hemoglobin). The study highlights the application of the "Rule of 10s" in determining the optimal timing for cleft lip repair, which recommends surgery when the infant is at least 10 weeks old, weighs 10 pounds, and has a hemoglobin level of 10 g/dL. This guideline ensures that the patient is physiologically stable and safe for anesthesia and surgery. [31,32,35] For many patients, surgery is performed in stages. Typically, cheiloplasty is performed first, followed by palatoplasty.

In syndromic or complex cases, surgery may require more extensive preoperative planning and additional evaluations by cardiology or neurology. The multidisciplinary surgical team often. Postoperative follow-up focuses on feeding, wound care, growth monitoring, and early speech development support. Long-term outcomes are best when infants are managed in specialized cleft centers, where coordinated surgical, nutritional, and developmental care is available. Surgery is not always a single procedure—some patients may require revision surgeries or orthodontic interventions later in childhood to optimize function and aesthetics.[33,34]

Conclusion

Cleft lip and palate surgery significantly improves patients' quality of life by enhancing facial aesthetics, speech, and psychosocial well-being. Postoperative

multidisciplinary care plays a crucial role in optimizing functional and social outcomes. However, long-term follow-up and access to comprehensive rehabilitation—including speech therapy, orthodontics, and psychological support—remain essential to achieve the best results and address residual functional or psychosocial challenges.

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