

CLEFT LIP AND PALATE

Cleft lip and palate (CLP) are among the most common congenital craniofacial anomalies, resulting from the failure of fusion of the facial processes during embryonic development. Cleft lip develops due to failure of fusion between the medial nasal and maxillary processes during the 5th–6th weeks of gestation, whereas cleft palate results from failure of fusion of the palatal shelves during the 8th–12th weeks of intrauterine life. The defect may involve the lip, alveolus, hard palate, soft palate, or a combination of these structures. CLP may occur as an isolated (non-syndromic) anomaly or as part of syndromes such as Van der Woude syndrome, Pierre Robin sequence, Treacher Collins syndrome, and Velocardiofacial syndrome.^{1,2} Its etiology is multifactorial, involving genetic susceptibility along with environmental factors including maternal smoking, alcohol consumption, folic acid deficiency, teratogenic drugs, infections, diabetes, and poor maternal nutrition.³ Globally, CLP affects approximately 1 in 700 live births, with a higher prevalence in Asian populations.³ Children with CLP commonly experience feeding difficulties, speech disorders, recurrent ear infections, hearing impairment, dental anomalies, maxillary growth deficiency, malocclusion, and psychosocial challenges, making early diagnosis and comprehensive management essential.⁴

Management of CLP requires a coordinated multidisciplinary cleft palate team that provides continuous care from birth through adulthood. The team typically consists of a plastic or maxillofacial surgeon, paediatric dentist, orthodontist, prosthodontist, otolaryngologist, speech-language pathologist, audiologist, paediatrician, geneticist, psychologist, nutritionist, and specialized cleft nurse.⁵ The paediatric dentist plays a key role by providing feeding counseling, fabricating feeding obturators and nasoalveolar molding (NAM) appliances, maintaining oral health, preventing dental caries, monitoring dental development, and coordinating orthodontic and restorative treatment.⁶ Treatment follows a staged protocol beginning with feeding support immediately after birth, followed by presurgical orthopedic therapy such as NAM in selected infants. Primary cleft lip repair (cheiloplasty) is generally performed at 3–6 months of age according to the Rule of 10s, while primary palate repair (palatoplasty) is usually carried out between 9 and 12 months to facilitate normal speech development.⁷

Several surgical techniques have been developed to restore facial esthetics, normal function, and speech. For unilateral cleft lip repair, the Millard rotation-advancement technique remains the most widely used procedure because of its excellent functional and esthetic outcomes. Other techniques include the Tennison–Randall triangular flap, Mohler modification, Fisher anatomical subunit repair, and Manchester repair for selected cases. Repair of the cleft palate aims to achieve complete separation of the oral and nasal cavities while reconstructing the levator muscle sling to restore velopharyngeal function and promote normal speech. Commonly performed palatoplasty techniques include the Von Langenbeck palatoplasty, Wardill–Kilner V-Y pushback palatoplasty, Veau–Wardill–Kilner technique, Bardach two-flap palatoplasty, Furlow double opposing Z-plasty, and intravelar veloplasty. Secondary procedures such as fistula repair, pharyngoplasty for velopharyngeal insufficiency, alveolar bone grafting, orthognathic surgery, and secondary rhinoplasty may be required depending on the patient's growth and functional needs. With advances in surgical techniques, presurgical orthopedics, orthodontics, speech therapy, and multidisciplinary cleft care, most individuals with cleft lip and palate can achieve near-normal facial appearance, speech, oral function, and quality of life.^{8,9}

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