

Original Article

Comprehensive Management of Cleft Lip and Palate — Our Institutional Protocol

Suman Das¹, Kaustuv Roy¹, Sayantan Nag², Dipsankar Jana³

Abstract :

Babies born with clefts of the lip, and the alveolus or palate, or both, require multidisciplinary, highly specialised treatment from birth to early adulthood. These defects arise in about 1·7 per 1000 liveborn babies, with ethnic and geographic variation. Effects on speech, hearing, appearance, and psychology can lead to long-lasting adverse outcomes for health and social integration. Typically, children with these disorders need multidisciplinary care from birth to adulthood and have higher morbidity and mortality throughout life than do unaffected individuals. We have outlined the various protocols we use in the management of such babies in our institute and presented outcomes of few of such cases done here.

Key Words : Cleft Lip; Cleft Palate; Palatoplasty

Introduction :

No greater problem exists in the entire field of surgery than the successful treatment of a patient suffering from complete, bilateral, cleft lip and palate. Deficiencies in facial and dental development, and in speech and hearing, remain frustratingly common and may be accompanied by psychosocial problems. The objectives are easily stated, but not so easily achieved. They are : to produce a normal appearance, normal speech, and normal dental occlusion. Of the three, the last is probably the least important; the first and second are both very important, but perhaps normal speech requires just a little more

emphasis than normal appearance. Successful outcomes require multi-disciplinary, highly specialised treatment from birth to early adulthood, and a lifetime commitment to the maintenance of oral health. Treatment starts with perinatal nursing care and primary operation, and is often followed by further procedures, sometimes into early adulthood. Care for children born with these defects generally includes many disciplines—nursing, plastic surgery, maxillofacial surgery, otolaryngology, speech therapy, audiology, psychology, genetics, orthodontics, and dentistry — but it forms only a part of the clinical load of every area, meaning that care has tended to be fragmented. This fragmentation of care has led to substantial variations in management, which continue to cause controversy. Furthermore, in both developing and developed countries, standards of care for patients with cleft lip, cleft lip and palate, or cleft palate alone remain a cause for concern.

Incidence :

Approximately 1 in 700 babies (1,200 babies) in the U.K. are born with Cleft Lip and/or Palate (CLP) malformations; it is the most common craniofacial congenital abnormality in the U.K. (NHS, 2018).

The overall incidence of CLP is 1 in 1,000 live births and isolated cleft palate occurs in 1 in 2,000 live births. The typical distribution of cleft types is Cleft lip alone: 15% ; Cleft lip and palate:

¹Senior Consultant, ²Senior Medical Officer, ³House Surgeon, Maxillofacial Surgery Unit, RKMSU.

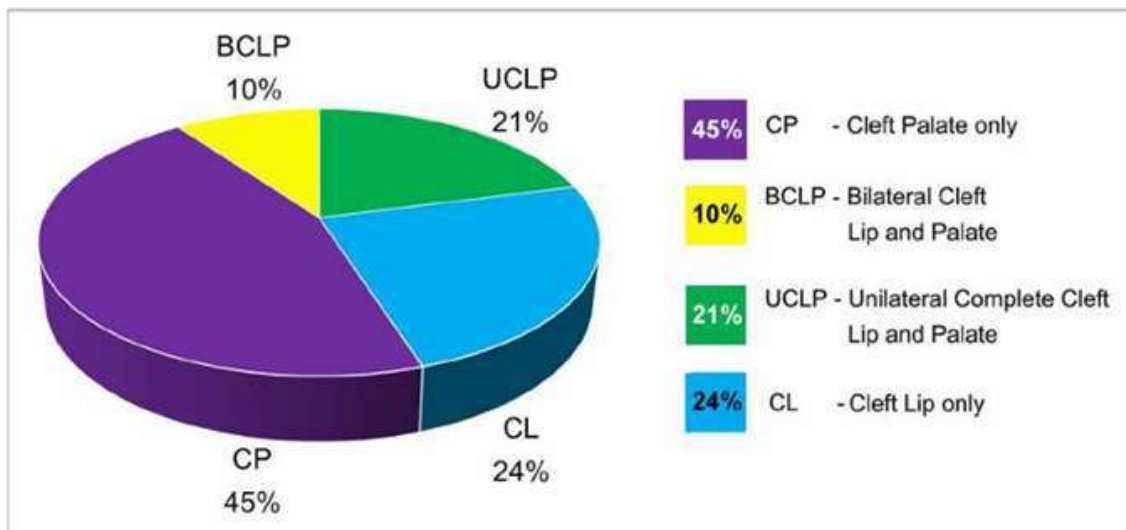
45%; Isolated cleft palate: 40%. Many epidemiological studies indicate that one parent affected with cleft has a 3.2% chance of having a child with CLP and a 6.8% chance of having a child with isolated cleft palate (Grosen et al., 2010).

Often, the cause of the cleft is not known but there may be a family history of clefts,

environmental factors or a genetic diagnosis; up to 50% of babies with isolated cleft palate have been found to have a genetic cause for the cleft. The Cleft Registry and Audit Network (CRANE) was set up by the UK Department of Health in 2000 to collect information about all children born with a cleft lip and/or palate in England, Wales and Northern Ireland. CRANE (2018) states:

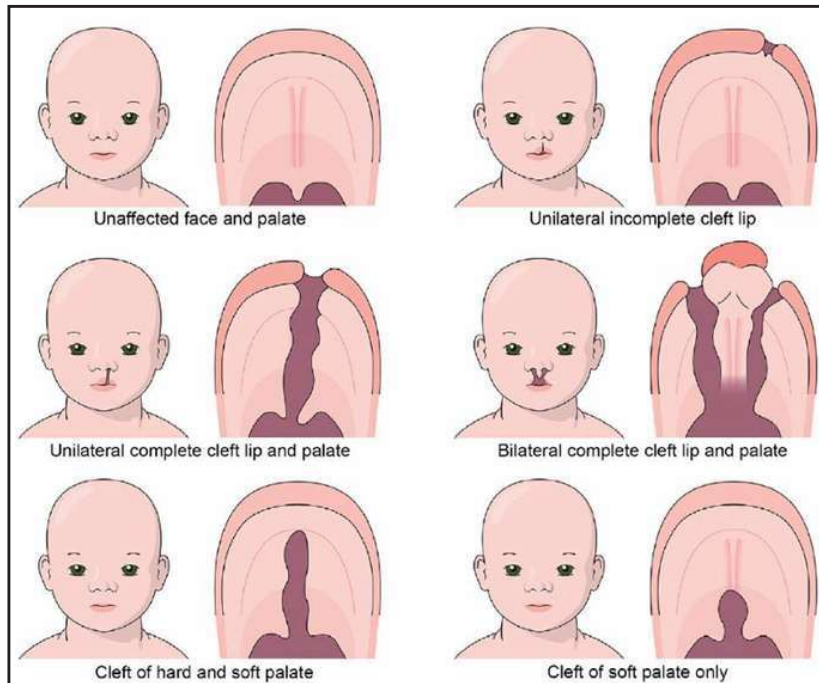


The Boy and his father both having cleft palate



Cleft type of children born with a cleft lip and/or palate in England, Wales and Northern Ireland average between 2008 and 2017 (CRANE, 2018)

Categories and Classification :



Variations in Cleft Lip & Cleft Palate :

There are different methods of describing cleft types e.g. the LAHSAL code. This 'code' indicates the area of the mouth affected by the

cleft. An uppercase letter indicates a complete cleft, a lowercase letter indicates an incomplete cleft, and a dot or dash indicates a non-affected area.

- LAHSAL complete bilateral cleft lip and palate;
-l left incomplete unilateral lip only, no palate involvement;
- ...S.. soft palate only, no lip involvement.

| | | |
|--------|--------|--------|
| LAHSAL |l | ...S.. |
| | | |
| | | |

Protocol for Management :

| | | Cleft lip and palate services: care pathways and location of care. | | | | | | |
|--------------------------|---|--|---|---|--|--|---|------------------------------|
| | | Antenatal | Birth - 8 weeks | 9 weeks - 2 years | 3 - 5 years | 6 - 10 years | 11 - 20 years | 21 years |
| Local obstetric units | Diagnosis with ultrasound imaging confirmed by specialists from main centre | Local maternity team to contact cleft team within 24 hours of birth | - | - | - | - | - | - |
| | Local obstetric unit to contact cleft team within 24 hours of diagnosis | - | - | - | - | - | - | - |
| Main "hub" cleft centres | Contact by clinical nurse specialist within 24 hours of referral | Visit by clinical nurse specialist within 24 hours of referral | Lip repair at 3-6 months Closure of palate at 6 - 9 months | Speech and language assessment and management ENT assessment and audiology management if necessary | Psychological support before attendance at school Operation to revise lip and velopharyngeal surgery if necessary | Orthodontic assessment Alveolar bone grafting if with associated orthodontic care | Definitive orthodontic care Team assessment for orthognathic surgery | Record of skeletal operation |
| | Provide printed information | Specialist advice on feeding | ENT assessment and management if necessary | Psychological support offered and available at all team clinics | Psychological support before attendance at school | Operation to revise lip and velopharyngeal surgery of necessary | Treatment and planning for skeletal surgery | |
| | Negotiate face-to-face meeting | Cleft team meets patients | ENT assessment and management if necessary | Psychological support before attendance at school | Psychological support before attendance at school | Operation to revise lip and velopharyngeal surgery of necessary | Appropriate operation as required such as soft tissue, nose, implants | |
| | Offer contact with Cleft Lip and Palate Association | Lip repair | ENT assessment and management if necessary | Operation to revise lip and velopharyngeal surgery if necessary | Psychological support before attendance at school | Operation to revise lip and velopharyngeal surgery of necessary | Appropriate operation as required such as soft tissue, nose, implants | |
| "Spoke" units | Surveillance of children for coexisting conditions and syndromes | Hearing test at 10 months if treatment for cleft palate is necessary | Annual hearing assessments up to 3 years of age if cleft palate | Speech and language therapy assessment | Speech and language therapy | Speech and language therapy | Speech and language therapy | |
| | Neonatal hearing test within first few days of birth for all babies | Annual hearing assessments up to 3 years of age if cleft palate | ENT and audiology assessment if necessary | Local orthodontics | Speech and language therapy | Speech and language therapy | Speech and language therapy | |
| | Genetic counselling for parents if indicated | Speech and language therapy assessment | Speech and language therapy | Speech and language therapy | Speech and language therapy | Speech and language therapy | Speech and language therapy | |
| Primary care | Education about dental health in liaison with main centre | Education about dental health in liaison with main centre | Education about dental health in liaison with main centre | Routine preventive dental advice and treatment | Routine preventive dental advice and treatment | Regular dental care | Regular dental care | Regular dental care |
| | Education about dental health in liaison with main centre | Education about dental health in liaison with main centre | Education about dental health in liaison with main centre | Routine child health surveillance | Routine child health surveillance | Routine hearing test at 8 months | Routine hearing test at 8 months | |

S.D. Colbert et al. / British Journal of Oral and Maxillofacial Surgery xxx (2015) xxx-xxx

Colbert SD, et al. Contemporary management of cleft lip and palate in the United Kingdom. Have we reached the turning point? Br J Oral Maxillofacial Surgery (2015)

How Do We Do It :

History — Whenever a patient comes to our OPD with clefts, we record the antenatal information of their mother, birth history, mode of delivery, birth weight, timing of delivery, any history of NICU admission after birth, history of asphyxiation, immunisation schedule and family history.

Clinical Photographs — Clinical photographs are recorded of both patients and their parents if they too have clefts.

Parental counselling — Babies especially with cleft palate are encouraged for breast milk feeding which in turn helps for growth of palatal muscles. Parents are advised to send their babies to regular kindergarten/preschool and junior schools with other babies which helps accustom them to a normal environment and prevents them from being bullied by other babies.

Speech — The mothers are encouraged to give the child singing lessons with Indian classical music with harmonium, as this is often more easily available than specialised speech and language therapy.

Preoperative Investigations — The complete blood count, random sugar, serology, coagulation profile, blood group and echocardiography (to exclude midline cardiac defects) are obtained.

Submucosal Cleft Palate Diagnosis — Bluish hue along the midline of palate, nasal regurgitation due to velopharyngeal insufficiency, nasal intonation of speech in spite of having an

intact soft palate all indicate possibility of a submucosal cleft.

Dental problems — Collapsed upper arch, caries prone, crowding of teeth, supernumerary teeth, hypodontia and hyperdontia may all complicate this condition.

Timing of Surgery —

Naso alveolar moulding (NAM) – If needed

- a) Cleft Lip – 3 months
- b) Soft Palate – 9 months
- c) Hard Palate – 18 months
- d) Alveolar bone graft +/- Grommet Insertion - 9- 12 years
- e) Post surgical orthodontics – 13 years
- f) Rhinoplasty +/- Secondary Lip revision - 14 years
- g) Secondary jaw deformity – 18 years onwards

N.B – Neonatal cleft lip repair was previously started in our unit in late 1990 for the first time in India, where the cleft babies were underwent lip closure within 72 hours of birth. Criteria was body weight more than 3 kg, without any other congenital anomalies. This was mostly done to reduce female foeticide and to reduce social stigma of babies especially females born with cleft lips.

Surgical Procedure :

Primary Cleft Lips are closed with modified Millard's rotation and advancement flap and Mohler's technique.

CASE : 1



Pre-Operation



Post-Operation

CASE : 2



Pre-Operation



Immediate Post-Operation



2 Weeks Post-Operation

CASE : 3

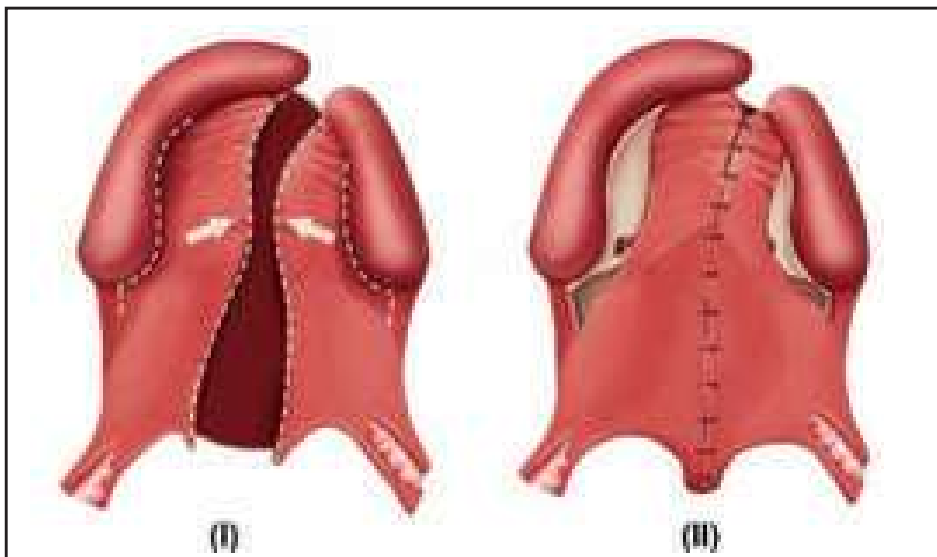


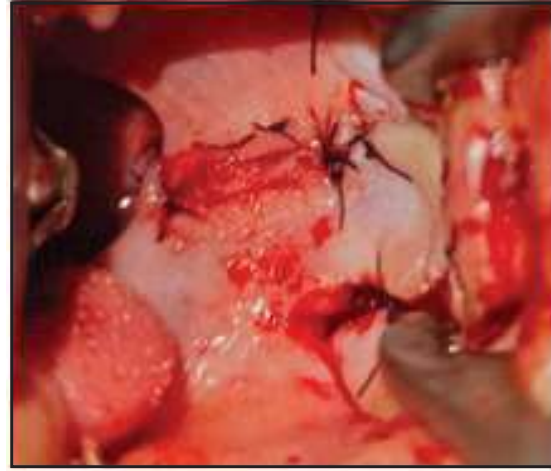
Pre-Operation



Post-Operation

Cleft Palate repair is mainly done by Von Langenbeck's palatoplasty technique.



CASE : 4**Pre-Operation****Post-Operation****CASE : 5****Pre-Operation****Post-Operation****Month follow-up of Adult Cleft
Palate**

Cleft Rhinoplasty

CASE : 6



Pre-Operation



Post-Operation

Secondary Lip Correction

CASE : 7



Pre-Operation



Post-Operation

Post Surgical Orthodontics

CASE : 8



Pre Orthodontic Malocclusion



Post Orthodontic Occlusion

CASE : 9



Pre Orthodontic Malocclusion



Post Orthodontic Occlusion

Long Term Follow-up :

CASE : 10



25 Year Follow-up of Neonatal Bilateral Cleft Lip

CASE : 11

16 Year Follow up of Neonatal Bilateral Cleft Lip



Reference :

1. Colbert SD, et al. Contemporary management of cleft lip and palate in the United Kingdom. Have we reached the turning point? *Br J Oral Maxillofac Surg.* (2015).
2. Mossey PA, Little J, Munger RG, Dixon MJ, Shaw WC. Cleft lip and palate. *The Lancet.* 2009 Nov 21;374 (9703):1773-85.
3. Jones M, Volcano J. Cleft Lip and Palate. IMI National Guideline 2018;Version 2:24-28. Available from: <http://www.imi.org.uk>.
4. Manchester W.M, The repair of bilateral cleft lip and palate. *Brit. J. Surg.*, 1965, Vol. 52, No. 11, November.
5. Millard, D. R, Morovic, C.G. (1998). Primary Unilateral Cleft Nose Correction: A 10- year follow-up. *Plastic & Reconstructive Surgery*, 102(5); 1331-1338.
6. Subramanyam D. An Insight of the Cleft Lip and Palate in Paediatric Dentistry - A Review. *J Dent Oral Biol.* 2020; 5(2): 1164.
7. Reidy J.P. The Other 20 Percent: Failures of Cleft Palate Repair. *British Journal of Plastic Surgery*; 12: 215.