

## Profile of Cleft Lip and Cleft Palate at a Public Hospital in Southern India

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**Objective:** To analyze the pattern of cleft lip and cleft palate cases and their operative management at a tertiary-care hospital. **Methods:** Data of all patients (<18 year) with cleft lip and cleft palate operated between 2011 and 2016 were extracted from the records and analyzed. **Results:** The final analysis included 1643 cases (60.9% males). Mean (SD) age at the time of surgery was 8.9 (10.17) years. Left-sided cleft lip was more common. Complete hard palate type of cleft palate on left was present in 787 (47.90%). Primary Cleft Palate repair was most common procedure (492, 29.9% children, followed by primary lip nose unilateral in 458 (27.9%) and lip nose revision in 298 (21.1%). **Conclusion:** Data on age at presentation and procedures used for correction of cleft lip and cleft palate are presented.

**Keywords:** Orofacial clefts, Repair, Smile train, Treatment.

Management of cleft lip and/or palate of a common birth-defect requires a multidisciplinary team with a complex approach [1,2]. Across the country, there are significant variations in treatment provided and the quality of outcome with some having excellent outcomes while many patients receiving sub-optimum, limited or no treatment [3]. With this background, the current study was designed with an aim to analyze the pattern of cleft lip and cleft palate cases presenting to a tertiary-care teaching hospital, in Southern India, and to analyze their operative management and outcome.

### METHODS

The present study was a retrospective case record review of all the cleft lip and cleft palate cases operated in our tertiary-care teaching hospital in Salem, Tamil Nadu between 2010 and 2016. The data of all the cleft lip and cleft palate cases undergoing surgical procedures was retrieved from Smile Train Express program that supports free cleft repair surgery and comprehensive cleft care for children globally. All the cases included in the current study were operated by a team led by the principle investigator. The study included both boys and girls younger than 18 years, at time of surgery. The study was approved by the Institutional human ethics committee. The personal identifies were delinked, while retrieving the data, to maintain the confidentiality of study participants. The cases were classified as per the Nagpur classification [4]. Cleft lip (Soft tissue), Cleft of the lip and alveolus (soft tissue and skeletal combined), Cleft of

the palate only (soft tissue and skeletal) and Cleft of the lip and palate (soft tissue and skeletal combined) were the various categories [4].

### RESULTS

A total of 2000 cases were present in the database; 1643 cases satisfying the inclusion criteria were included in the analysis. The median (IQR) age of the study population was 3 (1 to 9) years, with 1001 (60.9%) boys. Of these, 787 (47.9%) had complete left sided cleft lip and 228 (13.8%) had incomplete cleft lip. The right-sided cleft lip was found in 478 (29.1%) and incomplete right lip cleft in 167 (10.1%) (**Table I**). Complete and incomplete alveolus type of cleft lip right were observed in 450 (27.4%) and 65 (3.9%) subjects, respectively. Complete, incomplete and submucous soft palate type of cleft palate was observed in 1168 (71.1%), 15 (0.9%) and 15 (0.9%), respectively.

With regard to the type of operation, primary cleft palate repair was the most common procedure, in 492 (29.9%) children. The other common procedures performed were primary lip nose unilateral in 458 (27.9%) and lip nose revision in 298 (18.1%). Alveolar bone graft was performed in 137 (8.3%). The frequency of other procedures performed is summarized in **Table II**.

### DISCUSSION

The current review of case-records for 2010-2016 at a tertiary care hospital showed that the age at surgery was quite variable ranging from infancy to as old as 18 years,

**TABLE I** PROFILE OF CLEFT LIP AND CLEFT PALATE IN CHILDREN (<18) YEAR, 2010-2016 (N=1643)

Parameter	No (%)
Hard palate type of cleft palate-left	
Complete	806 (49.1)
Incomplete	103 (6.3)
Submucous	1 (0.1)
Hard palate type of cleft palate-right	
Complete	549 (33.4)
Incomplete	96 (5.8)
Submucous	3 (0.2)
Alveolus type of cleft lip-left	
Complete	748 (45.5)
Incomplete	95 (5.8)
Alveolus type of cleft lip-right	
Complete	45 (27.4)
Incomplete	65 (3.9)
Soft palate type of cleft palate	
Complete	1168 (71.1)
Incomplete	15 (0.9)
Submucous	15 (0.9)

indicating heterogeneous nature of the condition and care-seeking pattern of the affected. Left sided involvement was more common. The current study also showed that the most common surgeries performed were primary cleft palate repair and primary lip nose unilateral.

The study has few limitations. As this is a retrospective study, the missing data on certain cases could not be retrieved and the outcomes could not be assessed. Secondly, all the pediatric cases were included and the sample size was not determined, hence generalizing the study findings may not be possible.

The wide range of age at surgical procedure in the study may be partially attributed to the type and degree of cleft lip or cleft palate. Differences in care seeking due to differences in educational levels, awareness about the treatment and availability of quality health care services, socio economic status *etc.* could also be influencing factors determining the age at surgery, as previously reported [5]. Majority of published studies have reported different degrees of male preponderance. A 30-year epidemiological study [6] showed there was a higher prevalence among males over female. Various studies have reported a male to female ratio ranging from 1.26-1.39 [78]. The probable underlying reason for this could be the reported fusion of the palatine shelves a week later in girls than in boys [9]. Variations in genetic makeup may

also be one of the reason for the difference [8]. Kianifar, *et al.* [6] showed that cleft lip associated with cleft palate was most prevalent (50%). Most of the clefts were bilateral (92.6%) and 5% were located on the right side, contrary to the present study where the left side is more common. The study by Dvivedi, *et al.* [10] showed bilateral cleft in 19.3%. Previous studies [7,8,11,13] show that cleft lip most commonly occurs with cleft palate, as seen in the current study. The study by Agarwal, *et al.* [5] also showed a high association of cleft of the palate with cleft lip (86.5%).

The complex interplay between genetic and environmental factors undoubtedly plays a role in the pathogenesis of cleft lip and palate. Hence, relative proportions may vary across different studies. Management differs in various studies conducted in India. Primary surgical practices are almost similar to other studies. There is a lack of interdisciplinary approach in majority of the centers, and hence, there is a need for better interaction amongst the specialists [3]. A systematic review has suggested that the choice of primary cleft surgery are to be resolved, the challenge of multicenter prospective clinical trials must be faced [14]. In India, there is also a delay with regard to the treatment due to lack of awareness and education, socio-economic factors, unavailability of advanced quality care and high cost [5].

Based on the findings, we recommended that there is a strong need to analyze the factors, which are responsible for delayed care seeking for surgical correction of cleft lip and cleft palate. There is a need to initiate organized efforts to enhance the surgical correction rates at optimal age and prevent the adverse

**TABLE II** SURGICAL PROCEDURES PERFORMED IN CHILDREN WITH CLEFT LIP AND CLEFT PALATE (N=1643)

Operations	No. (%)
Primary cleft palate	492 (29.9)
Primary lip nose, unilateral	458 (27.9)
Lip nose revision	298 (18.2)
Alveolar bone graft	137 (8.3)
Primary lip nose, bilateral	94 (5.7)
Fistula repair	87 (5.4)
Primary lip nose, unilateral + primary cleft palate	29 (1.8)
Secondary cleft palate	21 (1.3)
Other	16 (1.0)
Primary lip nose bilateral + Primary cleft palate	7 (0.4)
Fistula repair + Alveolar bone graft	2 (0.1)
Primary lip nose unilateral + Other	2 (0.1)

**WHAT THIS STUDY ADDS?**

- Clinical profile of cleft lip and cleft palate in children, and the common surgical procedures performed.

consequences. Sensitization of the general public, health care providers at various levels and other stakeholders is vital in this regard. Existing centers can be considered for upgrading into established contact points for these patients.

*Contributors:* PS: conceptualized the study, coordinated the data retrieval, made analysis plan, conducted a review of the literature, prepared and reviewed all the drafts and will stand guarantor; KKT: collected the data, supported the literature search, verified and corrected the results, provided inputs on all drafts and helped in preparing the final draft for submission; MMR: planning the study, retrieval and analysis of the data, conducting search and compilation of literature, editing and proof reading of all the drafts, and approval of the final draft.

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