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Incidence of Bilateral Cleft Lip and Palate in a University Hospital Setting-A Retrospective Study

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ABSTRACT

Cleft lip and palate (CLP) is one of the most prevalent malformations occurring in the head and neck region. Cleft lip and palate is the second most birth defect in the US after club foot. The incidence of Cleft lip and cleft palate is also very common in Indian Population with the rate of 1 in 700 births approximately. In India, the main reason for the formation of Cleft Lip and cleft palate is consanguineous marriage due to less awareness among people. Cleft lip can be unilateral or bilateral and may involve alveolus or palate. Again it can be further classified as Complete or Incomplete cleft lip and /or Cleft palate. Most of the patients were deprived of treatment, mainly due to their unawareness and their lower socio-economic status. Cleft patients need comprehensive, cleft care management. So the aim of this study is to find the incidence of bilateral cleft lip or palate in patients who reported to Saveetha Dental College and Hospital, Chennai. This study is done with 76 patients,(40 males, 36 females)who visited a Saveetha Dental College during one year between June 2019-April 2020. All available data were extracted from patients case sheets and results were obtained through SPSS analysis. In this study, we observed that 90.5 % of patients reported with unilateral cleft lip and palate, where only 9.1% of patients reported with bilateral cases. Males were having high prevalence with 52.6 % and females 47.4%.In conclusion, male patients had higher cleft lip and palate compared to females. The incidence of bilateral cases seen among cleft lip and palate is fewer in males.

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INTRODUCTION

Cleft lip and palate are the most common facial deformity. It occurs in the primary palate, which is located anteriorly to the incisive foramen and its occurrence may be unilateral, bilateral, complete or incomplete (Shkoukani *et al.*, 2013; Goodacre and Swan, 2008; Kumar and Rahman, 2017).

The incidence is about one in 100 births and there are about a thousand new cases in the UK annually. Most commonly affects the left side in comparison to the right side (Jesudasan *et al.*, 2015). Unilateral

clefts are more common in the left side than right side ratio of 6:3:1 (Watted *et al.*, 2016). Patients with unoperated cleft palate demonstrate reduced maxillary growth with retruded pre-maxillary position related to the cranial (Graber, 1954; Shkoukani *et al.*, 2013; Jolleys, 1954). The aetiology and pattern of maxillofacial injuries reflect the trauma pattern within the community and can thus provide a guide to help design programmes towards prevention and treatment (Abhinav, 2019). Clefting of lip and palate can result from some medications such as corticosteroids in which some pregnant ladies take due to insomnia and anxieties (Jain, 2019; Kumar, 2017a).

In addition, retinoid drugs are considered as one of the main reasons that cause clefts in infants because of exposing pregnant women to these drugs (Mossey, 2009; Rao and Kumar, 2018a,b; Kumar and Sneha, 2016). Exposure to chemical and solvents can cause clefts of the lip palate or even both. Dental problems involve abnormalities in the size and shape of the teeth. The permanent lateral incisor shows abnormalities in size and shape in the side of the cleft, abnormalities in the position of the teeth (Kumar and Sneha, 2016). Delay of the eruption of permanent teeth and delay of formation of permanent teeth.

Most children are treated for a cleft or frenal attachment at an earlier age (Christabel and Anantanarayanan, 2016; Shkoukani *et al.*, 2013). Optimal management of a child with cleft lip demands an organized multidisciplinary effort involving fields of plastic surgery, maxillofacial surgery, orthodontics, speech therapy, paediatrics, nursing, genetics counselling, audiology, psychology, otolaryngology, social work (Shkoukani *et al.*, 2013; Patturaja and Pradeep, 2016).

The aim of this study is to find the incidence of both bilateral cleft lip and palate cases in our centre.

MATERIALS AND METHODS

This is a retrospective study conducted on 76 patients (40 males, 36 females) who reported to Saveetha Dental College, Chennai. The population chosen with patients who had cleft lip and palate in the oral cavity were examined and photographs evaluated.

Data collection

Data was collected from June 2019 to April 2020. Case sheets of 86000 patients who reported Saveetha dental college for treatments were analyzed and scrutinized according to inclusion and exclusion criteria and final sample size of 76 patients arrived. Their case sheets were reviewed and analyzed and results were obtained. Cross verification was done using photographs and contact numbers and also by an external reviewer to avoid bias.

Statistical analysis

The statistical test was done using IBM by statistical software. SPSS software version 19 was used. Descriptive statistics were used to evaluate age, gender and unilateral or bilateral. Independent variables are age and gender. Dependent variables are unilateral/bilateral and primary and secondary.

Inclusion criteria

All available cases related to cleft lip and palate (CLP) who were diagnosed and undergone treatment were included.

Exclusion Criteria

All patients reported for other treatments, patients without cleft lip/cleft palate and patients with insufficient data without proper photographs were excluded.

Ethical approval

Ethical clearance for the retrospective study was obtained from the Institutional Ethical Committee, Saveetha Dental College and Hospitals.

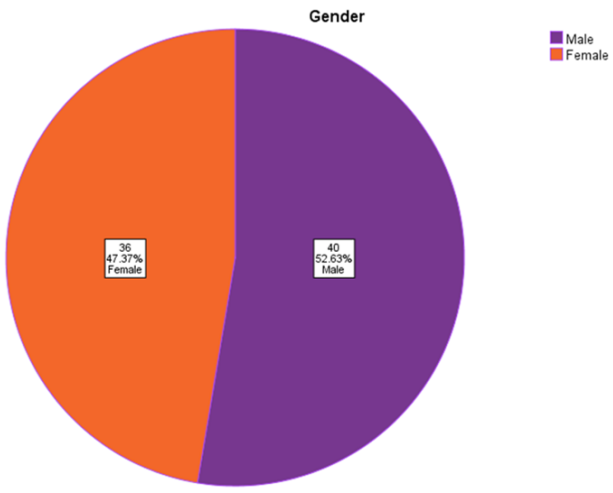

Figure 1: Pie-chart Representation of gender-wise distribution

RESULTS AND DISCUSSION

The data collected from the study was entered in the excel sheet and tabulated, which is then transferred to SPSS software to generate results by correlation and analysis.

From Figure 1, Purple depicts Males and orange depicts females. Gender wise distribution, 52.63%

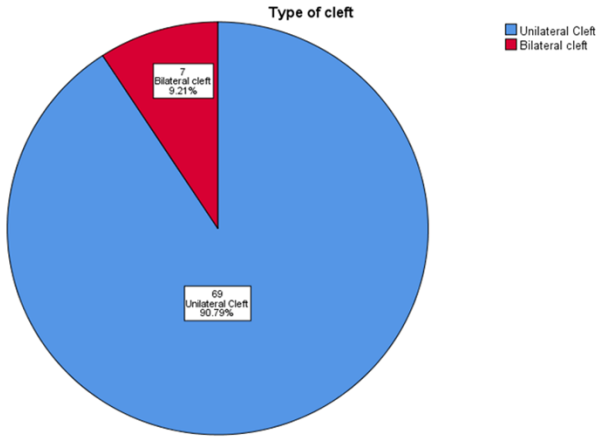

Figure 2: Pie-chart represents the distribution of total unilateral and bilateral cleft present

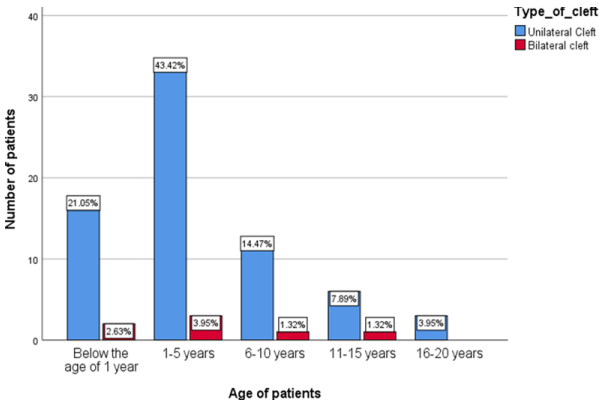

Figure 3: Graphical Representation of association of age and type of cleft

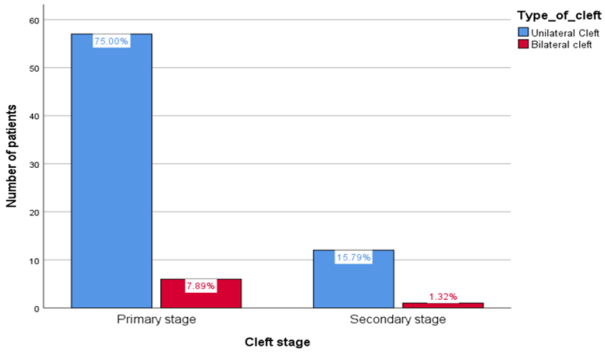

Figure 4: Graphical Representation of association of cleft stage and type of cleft

males and 47.37% of females were present in the study.

From Figure 2, Blue depicts unilateral cleft and red depicts bilateral cleft. Type of cleft distribution, 90.79% were unilateral cases and 9.21% cases were bilateral cleft.

From Figure 3, Age-wise and Type of cleft. Out of 76 cleft patients, 16 unilateral cleft patients were in the age group below 1 year, 33 under 1-5 years, 11

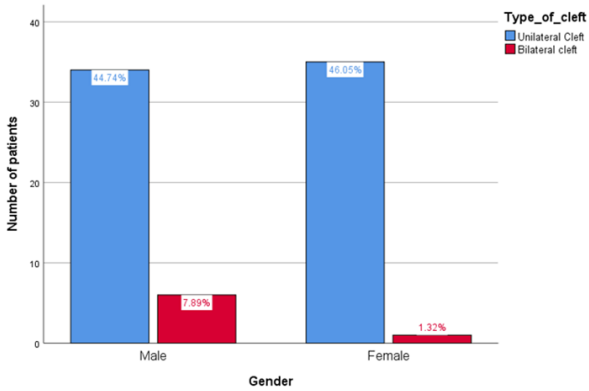

Figure 5: Graphical Representation of the association of gender and type of cleft

under 6-10 years, 6 under 11-15 years and 3 under 16-20 years of age whereas bilateral cleft was, 2 below age of 1, 3 under 1-5 years 1 under 6-10 years, 1 under 11-15 years and not present for under 16-20 years of age. The x-axis denotes age in years and the y-axis denotes the number of patients in each group. The blue bar depicts Unilateral cleft and red bar depicts Bilateral cleft. From the graph, it is found that both unilateral and bilateral cleft lip is more prevalent among 1-5 years age group. Using chi-square, the association between type of cleft present in each category of cases was found to be 0.642 and p value=2.714(>0.005) hence it is evident that age has no significant relationship with the type of cleft.

Below the age of one year, 21.05% patients had unilateral CLP, 2.63%patients had bilateral CLP.;Between 1-5 years of age,43.42%patients had unilateral CLP;3.95% patients had bilateral; Between 6-10 years of age,14.47% patients had unilateral CLP;1.32% patients had bilateral; Between 11-15 years of age,7.89% patients had unilateral CLP;1.32% patient had bilateral; Between 16-20 years of age,3.95% patients had unilateral CLP;None had bilateral CLP.

From Figure 4, The x-axis denotes cleft stage and y-axis denotes the number of patients in each stage. The blue bar depicts Unilateral cleft and red bar depicts Bilateral cleft. From the table, it's evident that unilateral lip is more prevalent in both the stages. Using a chi-square test, it is observed that the association between stage of cleft treatment and the number of patients in each stage was found to be not significant statistically. p Value=0.657(>0.005). Cleft stage and Cleft stage. Out of 76 cleft patients,57 unilateral cleft patients were primary cleft cases and 12 where secondary cases whereas in 6 bilateral cleft patients were primary cases and 1 for secondary cases Primary stage of CLP reported to be 75% unilateral cleft whereas 7.89% bilateral cases

whereas secondary stage was reported to be 15.79% is unilateral and 1.32% for bilateral.

From Figure 5, The x-axis denotes gender distribution among unilateral and bilateral cleft and the y-axis denotes the number of patients in each gender. The blue bar depicts unilateral cleft and red bar depicts bilateral cleft.so from the table we found that the incidence of the bilateral cleft is low in both the genders. Chi-square test was done and observed that there is no significant association between gender and type of clefts. Chi-square, test done and p value=0.072 (p>0.005). Gender wise distribution and Type of cleft. The prevalence of CLP in males is 44.74% of unilateral and 7.89% in bilateral whereas in female population CLP is 46.05% unilateral cleft and 1.32% in bilateral.

Clefting has a significant psychological and social, economic effect on patients quality of life and requires a multidisciplinary approach (Kumar, 2017b). The primary repair of CLP being a surgical repair which improves normal function, speech development, facial aesthetics (Kumar, 2017b; Packiri, 2017).

In our study also, males had more incidence of CLP than females. Males (52.6 %) and females (47.4 %). [Figure 3] In a similar study, the number of males who had reported to a university with chief complaints of cleft lip and palate was higher with 54.2 % for males whereas the females were 45.8% (Yilmaz, 2019). [Figures 1 and 5].

Freitas and De (2004) showed that the incidence of unilateral CLP found to be 66 %.and Bilateral CLP-34 % from Brazil. In the present study, unilateral cases are 90.8 %, whereas bilateral cases were only 9.2 %. The present study did not concentrate on the affected side [Figure 2].

Not many studies have reported to cleft lip and cleft palate cases with age prevalence. However, in the current study, patients who were diagnosed and the treatment performed were mostly under the age group between 1 to 5 years of age [Figure 3].

In a study done by Chen M, isolated cleft lips alone accounts for about 10 to 30 %, combined primary and secondary palate involvement comprises 35.55 % cases. Involvement of secondary CLP accounts for 30 to 45 % cases. The primary cases of CLP in our study were 82.9 % cases, whereas secondary cases were 17.1 %. [Figure 4].

Hence further studies need to be demonstrated on the affected side of CLP for easier treatment.

The current study includes only the age group below one year to 20 years. Hence further study is to be done on all smaller age groups with a broad population and suspected and to concentrate on the affected side of bilateral cases and comprehensive studies are needed.

Limitation of the study and its future scope

This study was done under a smaller population and variation with shorter duration. So a detailed study covering different populations and regions with long duration and the large sample size is needed to ascertain our findings.

CONCLUSION

The current study reported that the incidence of bilateral cases was comparatively fewer than unilateral cases and male populations showed higher incidences of cleft lip and palate than females. Also, this study showed that the higher incidence of cleft lip and palate reported to our institute were between the age groups 1 to 5 years.

Authors Contributions

First author [Monisha.K.] performed the analysis, and interpretation and wrote the manuscript.

Second author [Dr. Senthil Murugan.P] contributed to the conception, study design, data design, data analysis, interpretation and critically revised the manuscript.

Third author [Dr. Arvindh Kumar S] participated in the study and revised the manuscript.

All three authors have discussed the results and contributed to the final manuscript.

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Conflict of Interest

The authors declare that there is no conflict of interests for this study.

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