

Oral Mucosal Lesions In Children With And Without Cleft Lip: A Case Control Study.

Research Article

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Abstract

An orofacial cleft is the fourth common congenital malformations in humans. It is caused by an incomplete fusion of maxillary processes during 4th week to 12th week of intrauterine life. Oral mucosal lesion is an abnormal alteration in the mucosal surface. It may interfere with the physiologic functions such as mastication, swallowing and speech. Oral mucosal lesions also seen in children with cleft lip and palate. Since these children and their parents give more importance to the surgical correction of their clefts, chances to miss certain oral mucosal lesions tends to occur. Hence a study was conducted to assess the presence of oral mucosal lesions in children with cleft lip, and also compare with children without cleft lip. Retrospective data collected from 89,000 case records from June 2019 to March 2020 were taken for the study. Based on the inclusion and exclusion criteria, the present study consisted of 20 children divided into two groups: children with cleft lip and children without cleft lip. In both groups, presence of any oral mucosal lesions were verified and data was tabulated. The data was subjected to Mann-Whitney test using SPSS software. Children in both the groups (children with and without cleft lip) did not have any type of oral mucosal lesions, which was not statistically significant. Within the limitations of the present study, there is no evidence of oral mucosal lesions in children with and without cleft lip.

Keywords: Cleft Lip; Oral Mucosa and Ulceration.

Introduction

Orofacial cleft (OFC) is the most common craniofacial birth defect in humans. Orofacial cleft exhibit both ethnic and geographic variation. The estimated prevalence is 1.7 in 1000 live births in India. Incidence of cleft lip and palate (CLP) varies from 0.25 to 2.29 per 1000 births in India [1-3]. Clefts can be caused by various factors which include infection, toxicity, poor diet, hormonal imbalances, and genetic interference. Among these factors, genetics play an important role in cleft lip and palate. The craniofacial structure development is a coordinated process which involves the growth of multiple independently derived embryologic prominences called primordia. Incomplete fusion of primordia during 4th to 8th week of embryological life which leads to cleft lip, cleft of primary or secondary palate or both [3-4].

Dental complications of cleft lip include congenital missing teeth,

neonatal teeth, ectopic eruption, supernumerary teeth, anomalies of shape and size of tooth, macrodontia, microdontia, fused teeth, enamel hypoplasia, deep bite, cross bite which can be anterior or posterior, crowding and spacing of the teeth [5] Oral mucosal lesions are benign, and they require no active treatment and symptomatic relief is only required. It may interfere with physiologic functions such as mastication, swallowing and speech. It also causes burning, irritation and pain while eating food [6]. Oral mucosal lesion is caused by various etiological factors such as viral, bacterial or fungal infections, local trauma or irritation, systemic disease, excessive consumption of tobacco, betel quid, and alcohol [7-8]. A study conducted by Alessendra Majorana et al [9] in 2010 to evaluate the presence of oral mucosal lesions among 10,128 children aged between 0 to 12 years in Italy and concluded that 28.9% of children had an oral mucosal lesion. According to his study, the most common oral mucosal lesions were oral candidiasis (28.4%) of children followed by traumatic injuries

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(17.8%), and least common were erythema multiforme (0.9%). [10].

Treating the child's cleft conditions would be the most important both for the parent and the clinician as it forms the major part of food consumption. There are higher tendencies to miss out oral mucosal lesions like ulcers, coated tongue which could be due to a variety of factors. Assessing them would be of clinical significance as to whether these lesions need to be keenly diagnosed for children with cleft defects. However studies conducted in the south Indian population are limited. So the aim of the present study was to assess the presence of oral mucosal lesion in children with cleft lip and children without cleft lip. Previously our team has a rich experience in working on various research projects across multiple disciplines [11-25]. Now the growing trend in this area motivated us to pursue this project.

Materials and Methods

This is a retrospective study. This study was carried out in a hospital based university setting. This study was evaluated and ethically approved by an institutional ethical review committee. Retrospective data collected from 89,000 case records from June 2019 to March 2020. Informed consent was obtained from the parents or guardian before starting the treatment. Inclusion criteria were children with cleft lip, children aged from 6 months to 18 years, children with at least one or two erupted teeth, complete photographic and written records regarding the complete intra-oral examination of the patient. Age and gender matched controls i.e.

children without cleft lip, were taken according to the relevant cases obtained from the inclusion criteria. The exclusion criteria were incomplete and censored dental records, children below the age of 6 months and improper photographs.

Total cases acquired for this study were patients 20 which includes 10 children with cleft lip and 10 children without cleft lip (age, gender matched controls). Selected case and control group were examined by three people; one reviewer, one guide and one researcher. Patient's case sheets were reviewed thoroughly. Cross checking of data including digital entry and intraoral photographs was done by an additional reviewer, and as a measure to minimise sampling bias, samples for the group were picked by the simple random sampling method. Digital entry of clinical examination and intraoral photographs were assessed. For both groups, presence of oral mucosal lesions were noted by a researcher, entered into Microsoft excel (MS Excel) and then transferred into Statistical Package for the Social Sciences (SPSS) Software for statistical analysis. A correlation test (Mann-Whitney test) was done between the children with cleft lip and children without cleft lip. The difference was statistically significant when the p-value was less than 0.05.

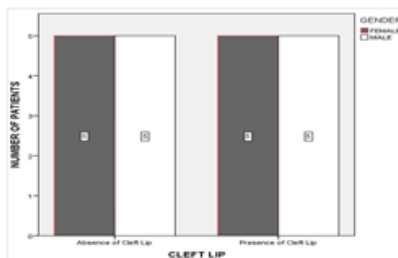
Results & Discussion

The final study sample size included a total of 20 children with 10 children with cleft lip (case group) and 10 children without cleft lip (control group). In this study, the control group was matched based on age and gender as similar to the case group. [Graph-1,2].

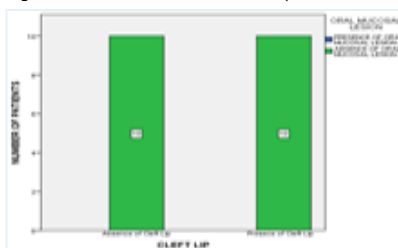
Graph 1: Bar graph represents the distribution of cases in case (children with cleft lip) and control group (children without cleft lip). (Y-axis represents number of patients; X-axis represents presence or absence of cleft lip) Note the equal distribution of cases in both the groups.



Graph 2: Bar graph represents the distribution of cases in case (children with cleft lip) and control group (children without cleft lip). (Y-axis represents the number of patients; X-axis represents presence or absence of cleft lip; grey represents female; white represents male) Note the equal distribution of cases in both the groups.



Graph 3: Bar graph represents the absence of oral mucosal lesions in children with cleft lip and children without cleft lip. (X-axis represents presence or absence of cleft lip; Y-axis represents the number of cases; green represents absence of oral mucosal lesions; blue represents presence of oral mucosal lesions). None of the cases in both the groups had oral mucosal lesions. (Mann-Whitney U test; p-value = 1 - not significant).



Absence of oral mucosal lesion was noticed in all children in both the groups i.e. children with and without cleft lip. On comparison of the results using Mann-Whitney test, the results were not statistically significant (p -value = 1) [Graph-3].

Oral mucosal lesions are commonly missed in the diagnostic period as the concerns over the actual cleft defect tend to be higher. The results of the current study shows that children in the case group i.e. children with cleft lip did not have any oral mucosal lesions in their oral cavity. This result was contradictory to few studies which reported occurrence of mucosal lesions among children with cleft lip [26-27]. Amandeep Chopra et al [26] in 2014 reported that 19.5% of cleft lip patients had oral mucosal lesions. Previous study conducted by Ajith Krishnan et al [27] in 2010 reported that 5.33% of cases and 4.66% of controls had aphthous ulceration in the buccal mucosa, 1.33% of cleft lip cases and 2.66% of the controls had abscesses in the gingiva.

The other result to be discussed is the absence of oral mucosal lesion in all the children of the control group i.e. children without cleft lip. Bezerra et al [28] found that childhood oral mucosal lesions among 0 to 5 five year old children to be 2.3% by observing their dental records. According to his study, the most common oral mucosal lesions were Born Nodules (37%) followed by candidiasis (25%) and least common was benign migratory glossitis (21%). Bessa et al found that incidence of childhood oral mucosal lesions among 0 to 4 year old children to be 24.9% and the most common lesions were geographic tongue (9.8%) followed by bite injuries (6.11%). Accidental biting during mastication, or consumption of hot food may cause traumatic ulceration. Iatrogenic damage caused by dental treatment also causes traumatic ulceration [29]. Prevalence of frictional keratosis ranges from 0.26 to 1.89% in children [29-32]. Prevalence of geographic tongue ranges between 0.37% and 14.3% in pediatric patients depending on the geographic area and may be up to 40.6% in children with systemic disease [30-38].

Preservation of primary teeth in the dental arch is important to guide the eruption of the permanent teeth in the optimal position. Grossly decayed primary teeth which are extracted before exfoliation causes space in the dental arch which causes malocclusion if space maintainer was not given [39, 40]. Bacteria play a vital role in the initiation and progression of dental caries which eventually causes pulpal and periapical disease [41]. Oral mucosal lesions interfere with oral hygiene measures as they cause mild discomfort while brushing the teeth subjecting to dental caries and periodontal disease in the children. Early childhood caries is the presence of one or more decayed which is cavitated or non cavitated, missing which is caused due to caries, or filled teeth in any primary tooth in a child younger than 71 months of age. Fluoride use has been recommended to prevent the dental caries [42]. Decreased concentration of fluoride also results in increased incidence of dental caries [43]. Saliva plays an important role in maintaining the oral health of an individual [44]. Untreated dental caries leads to pulpitis which is treated by means of root canal procedure - pulpectomy [45-49]. Chewable toothbrushes can be used to remove dental plaque and are more effective than manual brushing in children thereby decreasing the incidence of oral diseases [50-52].

Advantages of this study were that this was a case control study with age and gender matched controls to provide best results with

high internal validity, reasonable data, Disadvantage of the study was that this was a unicentric study with geographic limitations, limited sample size and has lower external validity. Future scope for this study includes larger sample size which is not confined to a particular geographic area and to assess the oral mucosa and changes by clinically examining the cleft lip patients. Our institution is passionate about high quality evidence based research and has excelled in various fields [53-63]. We hope this study adds to this rich legacy.

Conclusion

Within the limitations of the present study, there was no evidence of oral mucosal lesion in children with and without cleft lip.

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