Oral Health Status of Individuals with Cleft Lip, Cleft Palate or Both in a Nigerian Population

Idowu Olusegun Fadeyibi1, Modupeore Ekua Sorunke2, Olubunmi Olufunmilayo Onigbinde2, Victor Olabode Ogunbanjo2, Babatunde Ogunbiyi Ogunbanjo2, Samuel Ademiluyi1

1Surgery Department, Lagos State University Teaching Hospital (LASUTH), Ikeja-Lagos, Nigeria; 2Dental Department, Lagos State University Teaching Hospital (LASUTH), Ikeja-Lagos, Nigeria

Abstract:

Background: Cleft lip and/or palate (CL/P) deformities are congenital anomalies with fissure of either the lip, palate or both combined. The altered oral anatomy causes physiological changes and diminished self cleansing ability. The oral hygiene may thus not be properly maintained.

Aim: A prospective study of the oral health status of individuals with these deformities in Lagos-Nigeria was carried out to determine the need, types, and extent of pre-operative dental management that these patients may require.

Material and Methods: Individuals with orofacial deformities in Lagos were screened by a CL/P management team at a sponsored treatment programme between April and June 2007. All those with CL/P deformities that were seen during the exercises participated in the study. Dental examinations included inspections for caries, plaque, calculus, gingivitis, malocclusions and enamel hypoplasia. The following parameters were assessed: Oral Hygiene, Debris, and Calculus Indices; Periodontal diseases, Caries experience, and CPITN.

Results: Fifty-two cases with CL/P were seen. The ages ranged from 3 weeks to 32 years (mean 11.5 ± 10.9). CLP was the commonest presentation (48 %). The mean Oral Hygiene Index Score was 2.1 and 38.6 % had good oral hygiene. Highest prevalence of caries was in the age group 26-30 years. Enamel hypoplasia in primary dentition was present in one subject and 50 % of permanent dentition. Nearly 50 % of the cases had malocclusion and different degrees of periodontal diseases. All the cases in age group 31-35 years had calculus.

Conclusion: The oral health status of patients with CL/P deformities is poor in the environment in which the study was conducted.

Introduction

Cleft lip and palate (CL/P) deformities are the most common congenital abnormality of the orofacial structures and occur all over the world [1]. They are congenital anomalies with fissure of either the lip or palate or both combined [1]. Frequently, they occur in isolation (non-syndromic) but occasionally are associated with other congenital abnormalities (syndromic) [1, 2].

The incidence of cleft deformities varies among the different races of the world [3]. The reported incidence among the Orientals was 1:476, 1:700 among the Caucasians and 1:5000 among Black Americans [4]. Iregbulam [5] reported an average incidence of 1:2,703 from the eastern part of Nigeria.
The aetiology of the deformity is not fully understood. It has been associated with various factors including genetic predisposition and environmental factors [1, 6, 7]. Nutritional deficiencies, ingestion of certain drugs, maternal infections by some pathogenic organisms and increased parental age have all been considered as risk factors [1, 8, 9].

The clefting causes disparities in facial appearance and haunting expressions [1, 10, 11]. The facial appearance causes psychosocial maladjustments in both the patients and families. The children may be neglected and not properly cared for while the adults are excluded from certain jobs [10]. Feeding difficulties occur in infancy and abnormal dental occlusal relations in the adults [7, 9].

The deformity is associated with some peculiar problems in the oral cavity as a result of the altered anatomy [7].

The alteration causes physiological changes and diminished self cleansing ability. This may affect the oral hygiene which may not be properly maintained [7].

Various studies have shown the effects of the orofacial cleft deformities on the oral health status of patients with CL/P [12-14]. The oral hygiene of these patients were found to be poor, there were various dental anomalies including malocclusion, overcrowding, enamel hypoplasia and varying degrees of periodontal diseases.

The dental anomalies may cause peri-oral distortion thereby making the facial appearance less acceptable. This has been associated with incidence of teasing of these individuals among children, social isolation and poor self image [15-17]. The oral pathology thus may have contributed to the overall morbidity of CL/P.

Our search of the available literature did not reveal any work on the oral health status of these set of patients in our environment. We therefore decided to assess the oral health status of individuals with cleft lip, cleft palate and cleft lip and palate deformities in Lagos, Nigeria. We hope that the study will enable us determine the need, types and extent of preoperative dental management that are required by the patients. The findings from the study can also be used by the Health Administrators to plan for the dental needs of the population.

### Patients/ Methods

Between April and June 2007, individuals with CL/P deformities were screened at the Lagos State University Teaching Hospital (LASUTH), Ikeja-Lagos, Nigeria. The exercise was preceded by media jingles inviting those with orofacial deformities to come for free corrective treatment. A CL/P management team comprising of Plastic Surgeons, Periodontologists, Maxillofacial Surgeons and Orthodontists screened the patients. All those with CL/P deformities that were seen during the screening exercises who consented to the study participated in the study. The study was approved by the Research and Ethics Committee of our institution.

The presence of the deformities was confirmed by the Surgeons and the various types classified. The classification of Kernahan and Starks as modified by the International Conference for Plastic and Reconstructive Surgeons was used for classifying the cleft deformities [18].

The bio-data, presenting complaints, and histories were recorded. Two Consultant Periodontologists performed the dental examinations independently and the results compared. In cases of disparity, joint assessments were performed and consensus reached. The following parameters were assessed: Oral Hygiene, Debris, and Calculus Indices, Periodontal diseases, Caries experience, and Community Periodontal Index of Treatment Needs (CPITN). The dental examinations included inspections for caries, plaque, calculus, gingivitis, malocclusions and enamel hypoplasia. The assessments of oral hygiene was conducted using Simplified Oral Hygiene Index (OHI_S) developed by Greene and Vermillion [19], Community Periodontal Index of Treatment Needs(CPITN) [20] for the assessment of Periodontal diseases, and Decayed, Missing, and Filled Teeth (dmft/DMFT) for caries experience [21]. The sum of the DI-S and the Cl-S gives the Oral Hygiene Index.

The criteria used for the scoring of debris index are as laid out by Greene et al [22].

Calculus Index was scored using the criteria recommended by Spolsky [23] and the CPITN scored using the criteria that was laid out by Cutress et al [20].

The presence or absence of enamel hypoplasia and malocclusion were recorded using the WHO criteria in the basic methods for oral health survey [21,24]. The assessment for enamel hypoplasia is based on the examination of upper incisors, canine and the first premolar (or the upper first primary molar in the case of...
primary dentition) and the first permanent lower molars if present. Scores are then given based on the presence or absence of defects. When the defect is present, a score of 1 is given while 0 is the score when absent. The assessment for malocclusion is also carried out and graded accordingly. The grades are: 1 when there is no malocclusion, 2 when there is crowding, 3 in spacing, 4 when there are deep or open bites and 5 for cross bite.

The data were stored in a computer and analyzed using Excel software. The frequencies, percentages, means and standard deviations of the data that were collected were calculated.

Results

Fifty-two cases with CL/P deformities were seen, comprising twenty-seven males and twenty-five females giving a male to female (M:F) ratio of approximately 1:1. The ages ranged from three weeks to thirty-two years with a mean of 11.5 years (SD ± 10.9) (Table 1). Cleft lip and palate (CLP) was the commonest presentation (48%) (Table 2).

The overall mean Oral Hygiene Index Score (OHIS) was 2.1. The mean OHI-S was highest for age group 6-10 years and lowest in patients below the age of 5 years (Figure 1).

Only one deciduous tooth had caries. There were neither filled nor missing deciduous tooth. There were 10 (15.9%) decayed permanent teeth. No tooth was missing and none filled in the permanent dentition. The mean number of teeth affected by caries was 0.06 in children below the age of 5 years, 0.5 in age groups 11-15 years and 0.7 in age group 26-30 years. Age groups 6-10 years and 21-25 years were caries free.

Enamel hypoplasia in primary dentition was found only in 1 subject but affected permanent dentition in 20% of age group 6-10 years, and 50% in age group 31-35 years. These affected the upper portions of the first permanent molars, tips of the canine and portions of the incisors.

More than 50% of all the patients had various forms of malocclusion (Table 5). The prevalence of malocclusion increased with age (Figure 2).
Clinical Science

Table 4: Prevalence of Periodontal Disease among the Patients.

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>No Dentate</th>
<th>Percentage of Patients coded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>0-5</td>
<td>18</td>
<td>16.7</td>
</tr>
<tr>
<td>6-10</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>11-15</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>16-20</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>21-25</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>26-30</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>31-35</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

Code 0: Healthy tissue; Code 1: Bleeding observed during or after gentle probing; Code 2: Calculus (supra or sub gingival) or other plaque retentive factors such as ill-fitting crown, or poorly adapted edges of restorations either seen or felt during probing; Code 3: Pathological pocket of 4-5mm; Code 4: Pathological pocket of 6mm or more.

Nearly eighty percent of the subjects had different degrees of gingival inflammation. Only 16.7% of those below 5 years presented with healthy periodontium. None however had advanced periodontal disease.

Table 5: The types of malocclusion found in the different age groups.

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>Types of malocclusion (Number of cases)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>18</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6-10</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>11-15</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16-20</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>21-25</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>26-30</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>31-35</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Nearly eighty percent of the subjects had different degrees of gingival inflammation. Only 16.7% of those below 5 years presented with healthy periodontium. None however had advanced periodontal disease.

Nearly 6.0% of patients below age 5 years and 100% in age group 31-35 years had calculus. Shallow pockets (4-5 mm) were found among 22.2% of those in the 26-30 year age group. No subject had deep pocket more than 6 mm (Table 4).

Discussion

The mean Oral Hygiene Index Score (OHI-S) in this study is 2.1. This is just fair when compared with OHI-S values for those without the CL/P deformities in the population [19, 24-26]. Patients in the 0-5 year age group had the best score while those in the 6-10 years age group had the worst score. These findings are similar to the findings from previous studies by Stec et al [13], Chapple et al [14], Bian et al [27], Besseling et al [28] and de Castilho et al [29]. The oral hygiene status of the patients continued to deteriorate with age. This was worst in the 6-10 year age group with mixed dentitions. Dental anomalies in this age group include overcrowding and supernumerary dentition. These combine to make the maintenance of good oral hygiene difficult. The deteriorating OHI-S may also be due to the increase in calculus and the duration of soft tissue deposit that have calcified. By the age of 16 years, only the permanent dentition is left with less overcrowding. This may be responsible for the improvement that was observed in the group. By age 31, patients are self conscious and able to take better care of themselves including the dentition in various ways including visits to Dental Centers.

The scoring method that was used in the present study is the best for scoring oral hygiene in CL/P [7]. The next tooth can be included in the study if the prescribed tooth for observation is absent [19], a condition that is often found in CL/P. It is also the only specific index of Oral Hygiene that is available in the literature for patients with CLP [7].

Enamel hypoplasia was found in all the age groups. Enamel formation is affected both by genetic and exogenous factors [30]. Hypoplasia due to exogenous factors affects only portions of enamel that are formed during the course of the disturbance. Poor nutrition has been implicated as one of the etiological causes of enamel hypoplasia [31]. A previous study of the nutritional status of cases with CL/P deformities in Lagos by Fadeyibi et al [32] showed a malnutrition prevalence rate of 21.3%. Malnutrition could have been responsible for the enamel hypoplasia seen mostly in the permanent dentition in this study.

Malocclusion was found in all the age groups in the study. The prevalence increased with age. In patients with CL/P, there is disturbance of the facial growth [1, 7]. The effects of the disturbance on the facial bones continue to manifest with increasing age. The malpositioning of the teeth thus continues to show with increasing age. The condition makes oral cleaning difficult.

Figure 2: Prevalence of Enamel Hypoplasia and Malocclusion.
and encourages plaque accumulation.

Most of the patients have varying degrees of periodontal diseases. Only 3 (6.8%) of the dentate patients were free from periodontal diseases. The prevalence of periodontal diseases from the study is higher when compared to the findings from studies in Europe [13, 14], Asia [27, 28] and South America [29]. The worst condition (deep pathological pockets up to 6 mm) was found in the age group 26-30 years. This high prevalence of periodontal diseases reflected a lack of established oral hygiene practices in the patients. These could be due to either the neglect of the young patients by the parents or total lack of knowledge and techniques of dental care in these patients with peculiar dental anatomy. All these are indications for the need for oral health management protocol.

Conclusion

The study showed that the oral health status of individuals with the CL/P deformities in the environment in which the study was conducted was poor. In order to reduce the morbidity that may be attributable to the poor oral health status in these patients, regular dental clinic visits should be part of pre and post operative management of these patients. Parents and guardians should be encouraged to take good care of children with CL/P deformities. Dental checkups and oral health education should be instituted as part of regular Cleft Clinics. Methods of oral cleansing and teeth brushing should be demonstrated to the parents, guardians and adult patients.

References

22. Greene JC, Vermillion JR. The Simplified Oral Hygiene


