

## ORTHODONTIC NEEDS OF PATIENTS WITH CLEFT LIP AND PALATE IN ENUGU, FIVE YEARS POST REPAIR

I.I. Onah<sup>1</sup>, A.C. Okeke<sup>2</sup> and N. Folaranmi<sup>2</sup>

1. Good Shepherd Specialists Hospital, Enugu, Nigeria
2. Department of Child Dental Health, University of Nigeria, Enugu, Nigeria

*Correspondence:*

**Dr. I.I. Onah**

Good Shepherd Specialists Hospital,  
Enugu,  
Nigeria  
Email: anyionah@yahoo.com

### ABSTRACT

**Background:** Orthodontists play an integral role in the management of cleft lip and palate anomaly. This study looks at the frequency of anomalies amenable to orthodontics in patients who have had surgery and the effect of early or late surgical intervention.

**Methodology:** Patients aged 0-5 years with cleft of the lip and/or palate who were operated on by the plastic surgeon at the Good Shepherd Specialist Hospital, Enugu between 1<sup>st</sup> July 2011 and 30<sup>th</sup> June 2014, were recalled after a minimum of five years post-surgery and examined to determine the absence or presence of dental anomalies, amenable to orthodontic treatment, which have arisen since surgical repair. Descriptive statistics and t-test were used for data analysis and significance was at 0.05.

**Results:** Thirty-one children were operated upon in the period under review. Seventeen had timely (three months or less) lip repair. Seven had timely palate repair (18 months or less). Thirteen patients were successfully recalled, 12 had cleft lip repair while one had cleft palate repair. Repair was timely in 10 (83.3%) of the 12 that had lip repair with a mean frequency of four dental anomalies, while the two (16.7%) that had late repair had a mean frequency of five dental anomalies and this was not statistically significant (P value=0.711).

The only isolated cleft palate patient successfully recalled had a late repair. All 13 patients had at least four dental anomalies amenable to orthodontics. Hypoplastic maxilla were the most commonly occurring (eight patients, 61.54%) dental anomaly amenable to orthodontic treatment. None of the patients had a clinically visible supernumerary tooth. Out of 13 patients reviewed, six were males with a mean frequency of four dental anomalies while seven were females, also with a mean frequency of four dental anomalies. This was not significant (P-value=0.553).

**Conclusion:** There is need for the long term Orthodontic follow up of cleft lip and palate patients. The orthodontic management of dental anomaly should, therefore, be central in the planning and treatment of patients with cleft lip and palate.

**Keywords:** Cleft lip and palate, Orthodontics

### INTRODUCTION

Cleft lip and palate is the 2<sup>nd</sup> most frequent congenital craniofacial deformity with a mean prevalence in Europe of between 1:500 and 1:700.<sup>1</sup> A lower value is, however, reported among Africans.<sup>2</sup>

A study in Enugu, Nigeria reported an incidence of 1:968<sup>3</sup>. Surgical correction is central to the current team approach to cleft management. An ideal surgical design should proficiently restore functions including speech, mastication, breathing and aesthetics, while at the same time preserving the normal dentofacial growth potential in the involved area. However, surgical repair of cleft lip and palate is fraught with challenges,

including those that can be handled by orthodontics. Three principal reasons have been highlighted for carrying out orthodontic treatment in anybody including cleft lip and palate patients:<sup>4</sup> to improve the dento-facial appearance, correct occlusal relationship and to eliminate malocclusions that could damage the long-term health of the teeth and periodontium.

Different cleft lip and palate centers and surgeons around the world have suggested many different treatment protocols including timing of surgical intervention; each claiming superiority of its own approach. In all instances, time is usually the judge in

proving whether the approaches were truly positive on the dentition, jaw growth or other facial structures.<sup>5</sup> It is known that some cleft orthodontic problems are directly related to the cleft deformity itself, such as discontinuity of the alveolar process, missing and malformed teeth, whereas other aspects of the malocclusion are secondary to the surgical intervention performed to repair the lip, nose, alveolar and palatal defects.<sup>5</sup> There is also the issue of inappropriate timing of surgical intervention which may also contribute to the severity of these changes. Too early surgical interventions have been reported to impair maxillary growth, whereas with the converse, teeth eruption and Maxillary growth could be permanently endangered.<sup>6</sup> In Good Shepherd Specialist Hospital, Enugu where the current study was based, the Mohler's modification of Millard technique (for unilateral) and Mulliken's repair (for bilateral) is in common use for lip repair while the intravelarveloplasty is used for palate repair.

## OBJECTIVES

To determine the dental anomalies present after a minimum of 5 years in patients surgically treated for cleft lip and palate.

## METHODOLOGY

Sequential non-syndromic patients who were operated on, not less than five years ago by the plastic surgeon at the Good Shepherd Specialist Hospital, Enugu from 1<sup>st</sup> July 2011 to 30<sup>th</sup> June 2014 and aged 0-5 years as at the time of cleft lip and/or palate repair were selected for review.

From their hospital records they were classified into those who had timely repair and those who did not. Timely lip repair was taken to be repair carried out within three months of birth or less<sup>7</sup> while timely palate repair was taken to be within 18 months of birth or less.<sup>8</sup>

Attempt was made via telephone to reach the parents/guardians of these 31 sequential patients. A recall date and time was scheduled for each patient for re-examination.

On presentation, each presenting patient's case note was brought out from the hospital's record unit. The patients were then examined clinically using cheek retractors under bright light by a single examiner and the features found were recorded. Not more than five patients were recalled per day to prevent examiner's fatigue.

## RESULTS

Thirty-one children aged 0-5 years were operated in the period under review. Seventeen had timely lip repair.

Seven had timely palate repair. Of the 31 children, only 13 were successfully recalled. Two were said to have died, nine had either relocated out of Enugu town or lived far away and so could not make the appointment, while the remaining seven were not traceable.

**Table 1:** Timing of lip repair

Timing of lip repair among 12 participants	Number of patients	Mean frequency of dental anomalies
Timely	10 (83.3%)	4
Late	2 (16.7%)	5

Of the successfully recalled 13, 12 had cleft lip repair while one had cleft palate repair. Repair was timely in 10 (83.3%) of the 12 that had lip repair with a mean frequency of four dental anomalies, while the two (16.7%) that had late repair had a mean frequency of five dental anomalies and this was not statistically significant (P value=0.711).



**Figure 1:** Patient with dental anomaly

In the single patient who had cleft palate, repair was late with a mean of four anomalies. All 13 patients had at least four dental anomalies treatable by orthodontics (Table 1, Figures 1). Hypoplastic maxilla was the most commonly occurring (eight patients, 61.54%) dental anomaly treatable by orthodontic treatment (Table 2).

**Table 2:** Anomalies seen in the patients

Anomaly	Frequency
Anterior crossbite	5
Anterior openbite	4
Displaced teeth	5
Edge to edge occlusion	2

None of the patients had a clinically visible supernumerary tooth. Out of 13 patients reviewed, six were males with a mean frequency of four dental anomalies while seven were females, also with a mean frequency of four dental anomalies. This was not significant (P-value=0.553).

## DISCUSSION

It is generally accepted among clinicians that the management of cleft lip/palate requires the input of multiple specialists<sup>9</sup> including orthodontists (and other dental specialists), because of its usual association and presentation with dentofacial anomalies.<sup>10</sup>

To assess the dentofacial anomalies in this study, 31 patients aged 0-5 years previously operated on were intended for review. Seven (23%) of them had late cleft lip and/or palate repair. A previous study<sup>7</sup> in Enugu with four hundred and ninety-three participants had reported a higher percentage (91.69%) for late repairs. The reason for the relatively small percentage in the present study may be due to the fact that outreach surgeries where older patients are seen more frequently were done but not in our center in the period of the study.

Looking at severity from the point of view of number of anomalies associated with the condition, this study demonstrated an increase in the number of dental anomalies in late repair since there was slightly more number of anomalies seen in the patients who had late repair. This agrees with another study<sup>6</sup> which reported greater severity if repair was “too late”.

The dental anomalies, seen in the patients were anterior crossbite, anterior open-bite, displaced teeth, ectopic eruption, edge to edge occlusion, hypoplastic maxilla, impacted teeth, rotated teeth and upper midline shift. Each of the 13 patients had at least four dental anomalies treatable by orthodontics. Indicating more than a 100% chance of a dental anomaly in a cleft patient. This was similar to the finding by Akcam et al<sup>13</sup> in which 96.7% of the participants had a dental anomaly. This, however, largely contrasts with the report of two separate studies<sup>14,15</sup> in South America and Europe with a prevalence of 11.7% and 26% respectively. The reason for this large difference may be attributed to greater awareness and more availability of treatment options than there is in Nigeria.

Hypoplastic maxilla was the most commonly seen anomaly treatable by orthodontics. Souchois et al<sup>14</sup>, in their panoramic radiograph assisted study, however, reported that the most prevalent anomalies were missing and supernumerary teeth, occurring at a rate of 4.63% and 3.31%, respectively. No supernumerary

teeth were seen in the present study and this maybe as a result of non-use of panoramic radiograph in the assessment.

This difference in gender for those recalled was not statistically significant and this was similar to the study by Akcam et al<sup>13</sup>, in which there was no difference in the number of anomalies between males and females.

## CONCLUSION

Nearly all cleft lip and palate patients have multiple dental anomalies of which some level of prevention and treatment can be carried out by the orthodontist. There is, therefore a definite need for orthodontic treatment in these patients. The role of the Orthodontist should therefore, be central when planning treatment for persons with cleft lip and palate.

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