AAO Foundation Final Report 2015- 2016

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Award Type

AAOF Biomedical Research Award

Project Title

THE TREATMENT EFFECT OF NASOALVEOLAR MOLDING (NAM) ON MAXILLARY ARCH MORPHOLOGY IN INFANTS WITH BILATERAL CLEFT LIP AND PALATE

Project Year

July 2015 to June 2016

Institution

Wyss Department of Plastic Surgery
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Summary/Abstract

BACKGROUND/PURPOSE:

To describe the morphologic changes in maxillary arch (alveolar dimensions and position of premaxilla) of children with non-syndromic complete bilateral cleft lip and palate (BCLP) following treatment with NAM.

METHODS/DESCRIPTION:

Records of all patients with cleft lip and palate born between 2003 to 2013 were reviewed at our Institute. The criteria for inclusion in this study involved all non-syndromic patients with complete bilateral cleft lip and palate who had undergone NAM treatment at our Institute and whose records contained complete sets of the relevant maxillary casts. The sample consisted of 23 infants (18 male, 5 female). Plaster casts of the maxillary arch and premaxilla were obtained at time points (T0) pretreatment with NAM (mean = 27 days), (T1) post-NAM and prior to primary lip closure (mean = 6 months 5 days), and (T2) at time of surgical closure of palate (mean = 11 months 15 days). Casts were digitized using 3D scanner technology (3Shape™). 3D software (3dMDvultus™) was used to identify 5 defined anatomical landmarks on the 3D images. Linear dimensional analysis was used to measure distances between these landmarks and the changes between given time points. Student t-test was performed to quantify statistical significance for defined measurements between given time points.

RESULTS:

Statistically significant reduction in cleft width was observed bilaterally. On the right side, cleft width was reduced on average by 4.68 mm (max = 12.7 and p-value = ≤ 0.05) and on the left side by 6.53 mm (max = 14.7 and p-value = ≤ 0.05). Premaxillary position as measured from the incisal point to the bilateral canine points (where the lateral sulcus crosses the crest of the ridge) was observed to retract on the right side on average by 3.98 mm (p-value ≤ 0.05) and on the left side by 3.37 mm (p-value ≤ 0.05). During this period, there was a slight average reduction in intercanine point width of 2.29 mm (p-value ≤ 0.05) and increase in tuberosity width of 2.35 mm (p-value ≤ 0.05).

CONCLUSIONS:

NAM treatment is shown to significantly reduce cleft width. In asymmetric and rotated premaxilla NAM efficiently reduces asymmetry and corrects the malposition. The NAM appliance also efficiently controls vertical position of premaxilla and may obviate the need for future premaxillary positioning surgery in some patients. At one year follow up NAM correction appears stable and arch continues to grow and develop.

Were the original, specific aims of the proposal realized?

Yes

Were the results published? If not, are there plans to publish? If not, why not?

Results are not yet published.

This paper will be published in The Cleft Palate-Craniofacial Journal

Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?

Yes, Presented at:

13th International Cleft Congress 2017, February 8th to 11th 2017. Chennai India. Preconference course – "Network between orthodontist and surgeon during management of patients with oro-facial clefts: Infancy to Adolescence'

Will be presented at :

The 41st Annual Meeting of the Japanese Cleft Palate Association. Tokyo, Japan May 18-19 2017

To what extent have you used, or how do you intend to use, AAOF funding to further your career?

I have used the AAOF funding for my research and publication in the area of Craniofacial Orthodontics. Publication is an important criteria for my promotion as Associate Professor in Plastic Surgery (Craniofacial Orthodontics). I am thankful to AAOF for their generous support.