

Effect of Maxillary Expansion and/or Protraction on Oropharyngeal Airway in Individuals with Non-syndromic Cleft Palate with or without Cleft Lip

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Aim: To evaluate and compare oropharyngeal airway volume and minimal cross-sectional area (MCA) in non-syndromic individuals with cleft palate with or without cleft lip (CP/L) using cone beam CT (CBCT) before and after Phase I orthodontic maxillary expansion with or without protraction.

Method: This is a retrospective study of CBCT data of adolescent individuals (ages, 8.7 ± 2.6 years) with cleft palate with or without cleft lip (n=18) who underwent Phase I orthodontic maxillary expansion with or without protraction at University of California, San Francisco (UCSF). IRB approval was obtained for this study. Volume and MCA of the oropharyngeal airway were evaluated before and after orthodontic treatment using 3dMDvultus software. Five measurements were repeated to verify reliability. Changes in volume and MCA were analyzed using Wilcoxon signed-rank test at a level of significance of 0.05.

Results: The method was found to be reliable; the intraclass correlation coefficients between the double measurements were all over 0.9. There was a statistically significant increase in oropharyngeal airway volume after phase I orthodontic treatment, however, there was no statistically significant change in minimal cross-sectional area.

Conclusion: 3D imaging using CBCT and 3dMDvultus is reliable for assessing airway volume and minimal cross-sectional area. Phase I orthodontic treatment with maxillary expansion with or without protraction may have an influence on increasing oropharyngeal airway volume in non-syndromic individuals with cleft palate with or without cleft lip.

Biography:

Najla Alrejaye is a Diplomate of the American Board of Orthodontics. She earned her Bachelor of Dental Surgery (BDS) degree from King Saud University. She completed her residency in Orthodontics at Boston University, where she received her Doctorate of Science in Dentistry (DSc D) and Certificate of Advanced Graduate Studies in Orthodontics (CAGS). She completed a fellowship program in Craniofacial and Special Care Orthodontics at University of California, San Francisco. She is currently an Assistant Consultant at Ministry of National Guard Health Affairs, Saudi Arabia. Her goals are to contribute to the profession through clinical care, education, and scientific research; and to improve care for individuals with craniofacial anomalies.