

Effect of rapid maxillary expansion on nasomaxillary structure and sleep disordered breathing in children with obstructive sleep apnoea.

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Abstract

Objective: The aim of this study was to assess the effect of RME on upper airway structure and its relationship to improvements in sleep disordered breathing.

Methods: The study was carried out in 23 children with malocclusion and OSA. Clinical assessment visits, daytime sleepiness questionnaire, polysomnography and orthognatodontic examination were performed before (T0) and 4 (T1) and 12 (T2) months after RME. CB CT scans with 2D and 3D reconstructions were performed before (T0) and 12 after months (T2) RME. The relationship between airway changes and improvements in sleep disordered breathing were evaluated.

Results: In all cases, opening of the mid-palatal suture was successfully achieved. Volume of the total upper airways, nasal cavity, nasopharynx and oropharynx increased significantly as well as the nasal osseous width. The increase in posterior suture, pterygoid process, maxillary, nasal cross-sectional width were significantly correlated with total upper airway volume, nasal cavity volume, nasopharyngeal airway volume, and oropharyngeal airway volume. The improvement in AHI was correlated with the increase in total upper airway volume at 12 months.

Conclusion: The study provides important details about the effect of RME on upper airway structure, including an enlarged posterior suture, pterygoid process, maxillary width and nasal cross-sectional width and enlarged airway volume.