Rapid Maxillary Expansion in the Obstructive Sleep Apnea Syndrome - Meta-Analysis

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Introduction

The obstructive sleep apnea syndrome (OSAS) is a breathing disorder caused by repeated partial or complete upper airway obstruction (Fig. 1). This condition causes the cessation of breathing for 10 seconds or more, with changes in the normal pulmonary ventilation, resulting in a deficit of oxygenation. In prolonged episodes can lead to a progressive increase in the partial pressure of carbon dioxide in blood and consequent decrease in arterial pH (1,2,3). The orthodontic treatment has been considered an important option in the treatment of mild OSAS, representing also a viable alternative to the use of other therapeutic procedures like the continuous positive airway pressure (CPAP)⁴. Some intra-oral appliances, particularly the rapid maxillary expander (RME), may be used in cases of severe OSAS if the other therapeutic modalities are not indicated⁵,⁶.

Methods

The research was conducted in compliance with the criteria described in the following table:

| Type of studies | Systematic reviews, meta-analysis, randomized controlled trials, cohort studies, with the aim of assessing the effectiveness of RME |

| Type of participants | Children and adolescents, under 18 years old, with OSAS and subjected to maxillary expansion |

| Type of outcomes | Improvement in the condition of OSA was considered as corresponding to the normalization of apnea hypopnea index (AHI) |

| Research strategy | Research on the following databases: PubMed, Web of Science, LILACS, Cochrane Library and Embase data with the keywords: "Rapid Expansion Technique" (RME) and "Obstructive Apnea Syndrome" (OSAS) in Portuguese and English with publication dates between January 2000 and December 2010 were accepted |

Results

64 Publications identified

| PubMed 20 | Web of Science 14 | LILACS 4 | LILACS 11 | IMEAN 5 |

0 selected publications

84 Publications identified

18 rejected publications

10 not relevant publications

16 potentially relevant publications

10 selected publications

| Authors, Year | Aim | Study design | RME before and after | AHI before and after | Methods | Follow-up |

| Publication 20 | | | | | | |

Vale, 2007

To evaluate if OSA is on the RME in children with obstructive sleep apnea syndrome: 36 months of follow-up. Sleep Med. 10. 2009.

Miano, 2007


Pirelli, 2007


| Conclusions | |


Table 1 - Characteristics of the selected studies. AHI, Apnea Hypopnea Index; RME, rapid maxillary expansion; RME, rapid maxillary expansion; Standard deviation. |

Conclusion

Despite the limitations related to the heterogeneity found in the reviewed studies, the meta-analysis results suggest that RME has a significant effect on OSAS and improves the AHI in children. Thus, this therapeutic approach may be considered as an auxiliary method in the treatment of children with risk factors for OSAS such as craniofacial abnormalities.

Reference


