APPENDICES

Appendix 1. Studies included in the systematic reviews

Authors Year	*Mean age Sample size*	*Effects of RME on airway*
Monini et al. 2009	7.8 y N=65	There was an improvement of nasal respiration in children via a widening effect on the nasopharyngeal cavity.
Aloufi et al. 2012	14.2 y N=30	Positive effect on the upper pharyngeal airway. RME did not significantly improve the mode of breathing.
Iwasaki et al. 2012	10.2 y N=23	Improvement of nasal airway ventilation by rapid maxillary the expansion was detected by computational fluid dynamics
Iwasaki et al. 2014	9.7 y N=25	The nasal airway ventilation conditions were improved and constriction of the pharyngeal airway less likely after RME
Caprioglio et al. 2014	7.1 y N=14	Increases in total airway volume
Fastuca et al. 2015	7.5 y N=15	The upper, middle, and lower airway volumes, and oxygen saturation significant increased, 71% of AHI decrease
Izuka et al.2015	10.5 y N=25	Significant gain in the airway volume of the nasopharynx and nasal cavity, and also in the anterior and posterior widths of the nasal floor
Compadretti et al. 2006	14 y N=27	Increase in nasal width. Decreased nasal airway resistance and increased total minimal cross-sectional area using AR
Enoki et al. 2006	8.5 y N=29	Decreased nasal airway resistance but no significant change in minimal cross-sectional-area
Doruk et al. 2007	13 y N=10	Increased nasal cavity volume evaluated with CT and AR
Palaisa et al. 2007	11.5 y N=19	10% increase in the nasal area and nasal volume using CT
Oliveira et al. 2008	13 y N=38	A mean reduction of nasal airway resistance; and mean increases in total nasal volume analyzed via AR without decongestant and model scanning and nasal valve area
Haralambidis et al. 2009	14.5 y N=24	A significant average increase of 11.3% in nasal volume. Sex, growth and the skeletal relationship did not influence measurements
Matsumoto et al. 2010	8.5 y N=27	RME significantly increased nasal and maxillary width, but the nasal mucosal effects were subtler and not stable
Görgülü et al. 2011	13.8 y N=15	12.1% increase was measured in nasal cavity volume evaluated through CT
Langer et al. 2011	8.5 Y N=25	RME does not influence on the nasopharyngeal area or nasal airway resistance in long-term evaluation

Cordasco et al. 2012	9.7 y N=8	Significant enlarge the dimension of the nasal cavity, and the increment is larger in the lower part of the nose and equally distributed between the anterior and the posterior part of the nasal cavity.
Smith et al. 2012	11.5 y N=20	Significant increases in nasal cavity volume and nasopharynx volume. No increase found in the oropharynx, hypopharynx, and maxillary sinuses. CT was used to evaluate the airway
Itikawa et al. 2012	8.5 Y N=29	No effect on nasal resistance since the nasal bony expansion is followed by a mucosal compensation
Chang et al. 2013	12.9 y N=14	No changes in retropalatal and retroglossal and total volumes. Only the cross-sectional area of the upper airway at the posterior nasal spine to basion level significantly showed a moderate increase after RME
Pirelli et al. 2015	8.6 y N=23	95% AHI decrease, 16% improvement in LSAT
Taddei et al. 2015	8.9 y N=30	7.7% AHI decrease
Villa et al. 2015	6.2 y N=21	51% Decrease in AHI
Hosselet et al. 2010	12 y N=10	55%AHI decrease
Villa et al. 2014	6.6 y N=22	52% AHI decrease
Miano et al. 2009	6.4 y N=9	69% AHI decrease
Villa et al. 2007	6.9 y N=14	74% AHI decrease
Marino et al. 2012	5.9 y N=15	24% AHI decrease
Pirelli et al. 2012	7 y N=40	55% AHI decrease, 11% LSAT improvement
Villa et al. 2011	6.6 y N=10	63% AHI decrease, 2% LSAT improvement
Pirelli et al. 2010	8.7 y N=60	95% AHI decrease
Cameron et al. 2002	11.8 y N=42	Increase in nasal width.
Baccetti et al. 2001	12 y N=42	Increase in nasal cavity width.
Zhao et al. 2010	12.8 y N=24	Retropalatal differences found in oropharyngeal volume when comparing subjects with narrowed maxilla with subjects without narrowed maxilla
Christie et al. 2010	9.9 y N=24	Increases on nasal width
Zeng and Gao 2013	12.7 y N=16	Statistically significant nasal cavity width and volume increase, and Oropharyngeal decrease using CBCT
Ribeiro et al. 2012	7.5 y N=15	Increase in the nasal cavity and oropharyngeal median sagittal area (p=0.01) and lower axial area (p=0.04) after RME. No change in nasopharynx volume.

Pangrazio-Kulbersh et al. 2012	13 y N=23	Increase in the nasal cavity, and sinus volume, but no change in posterior airway volume using CBCT
Baratieri et al. 2014	9 y N=30	Increase in nasal cavity width.
Pirelli et al. 2004	8.6 y N=31	Changes in AHI, Arterial oxygen saturation; sleep quality
Guilleminault et al. 2011	6.5 y N=31	Changes in AHI, Arterial oxygen saturation; Respiratory disturbance index
Almuzian et al. 2018	12.6 y N=17	Statistically significant increase in nasopharynx volume and retropalatal oropharynx using CBCT
Azaredo 2014	10.7 y N=31	No statistically significant changes in total airway volume
Babacan et al. 2006	12.3 y N=10	Statistically significant increase in the nasal cavity volume of about 12.5%evaluated through AR without decongestant
Cappelletti et al. 2008	9 y N=70	Statistically significant increase in nasal cavity evaluated through AR with a decongestant
Darsey et al. 2012	13.8 y N=30	No changes in the maxillary sinuses
Kabalan et al. 2015	14 y N=81	No significant changes in the nasal cavity after RME evaluated with AR
Li et al. 2015	12.1 y N=35	29.9% Increase in the nasopharyngeal volume evaluated with CBCT. No changes found in the oropharynx
Manini et al. 2007	7.5 y N=30	Increase in the palatal volume evaluated with Photogrammetry
Sokucu et al. 2010	12.4 y N=30	Increase in nasal cavity volume evaluated with AR with and without decongestant
Bicakci et al. 2005	12.5 y N=58	Increase in the nasal minimal cross-sectional area. However, a decrease was seen after the retention phase
Iwasaki et al. 2013	9.82 y N=48	Decreased intraoral airway volume, and increase the pharyngeal volume
El et al. 2014	14 y N=70	No significant change in oropharyngeal volume.