

database searching was 59. The selected studies, after excluding non-pertinent records and applying inclusion and exclusion criteria, were 10. Lin. et al. found that bone-borne expanders produced greater transverse skeletal expansion, less alveolar bending and less dental tipping compared to tooth-borne expanders. The research of Tugce et al. showed that the group treated with bone-borne expansion had greater expansion in the midpalatal suture compared to the tooth-borne. Moreover, the author didn't observe differences in root length between the two groups. Kavand et al. analyzed volume increase of nasal cavity and nasopharynx produced by both bone-borne and tooth-borne expansions and found no statistically significant difference between the two methods. In addition the study displayed that tooth-borne expansion group showed a greater buccal tipping of maxillary molars compared to bone-borne expansion group. Mosleh et al. observed similar basal bone expansion at the level of the hard palate both in patients treated with bone-borne expansion and in the ones treated with tooth-borne one. Furthermore, the authors found that tooth-borne expander produced more dental expansion and buccal rolling and a greater increase in nasal width. Other two studies from Lagravère et al. reported similar results, affirming that bone-borne maxillary expansion produced a lower component of dental expansion. The research by Davami et al. didn't encounter differences in dental and skeletal results between the expanders and observed greatest changes in the transverse plane, while the modifications occurring in the vertical and anterior-posterior planes were negligible.

Conclusions: Both bone-borne and tooth-borne maxillary expansion generates transverse skeletal expansion. Bone-borne expansion seems to produce greater transverse skeletal expansion and less dental side effects such as buccal tipping of the maxillary first molars; however further investigations are needed.

Alt-RAMEC protocol, a literature review

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Aim: To investigate treatment effectiveness of alternate rapid maxillary expansions and constrictions (Alt-RAMEC) protocol in Class III growing patients.

Methods: the research was made on Pubmed (Medline) using the keyword "Alt-RAMEC", with no limit in terms of publications date. Inclusion criteria were

methodological reliability and reproducibility studies and non-syndromic subjects treated for skeletal Class III malocclusion using Alt-RAMEC protocol. Exclusion criteria used were studies in animals, case reports, reviews and opinion articles and studies with a sample size undergoing rapid maxillary expansion and constriction treatment inferior to 20 subjects.

Results: The amount of records identified through database searching were 30. The selected studies, after excluding non-pertinent records and applying inclusion and exclusion criteria, were 6. Gandedkar et al. research examines Alt-RAMEC effects on the alveolus surrounding the anchor teeth, founding that buccal alveolar bone thickness reduction is within the scope of initial alveolar thickness of the expander's anchor teeth. Ozbilen et al. compared changes in pharyngeal airway, maxillary sinus volume and skeletal parameters after RME and Alt-RAMEC followed by facemask therapy. The study showed that Alt-RAMEC group presented greater distance between the anterior nasal spine and the horizontal reference plane and a major increase in maxillary sinus volume. Similar results were obtained by Ylmaz, consisting in an increase of the upper airway volume, in an expansion that also involved the neighboring sutures and in a forward movement of point A. Maino et al. reported positive skeletal and dentoalveolar changes in growing Class III patients treated with a rapid maxillary expander with hybrid anchorage according to the Alt-RAMEC protocol, followed by facemask therapy. In another study, by Masucci et al., this protocol was compared to RME/FM procedure, concluding that Alt-RAMEC/FM protocol showed more favorable maxillary skeletal effects leading to greater improvements in sagittal skeletal relationships than the RME/FM protocol. Canturk et al. investigated treatment's results using facemask in different moments: during Alt-RAMEC procedure or after, Class III malocclusion and negative overjet were improved in both groups, however no statistically significant differences were found.

Conclusions: The application of the Alt-RAMEC protocol before maxillary protraction seems to be a valid tool for early treatment in patients with Class III malocclusion. It appears to be more effective than RME/FM therapy; however further studies are needed.

Assessment of orbital volume and morphological changes after rapid maxillary expansion performed with tooth-bone and bone-borne devices. A retrospective study using surface-to-surface matching technique

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Aim: The effects of RME not only involve dental arch width and maxillary vault area but also associated maxillofacial structures. Displacement can be observed at the level of the frontal, zygomatic, and parietal bones, supporting the contention that the zygomaticomaxillary sutures, can be influenced by maxillary expansion. It would seem reasonable to assume that the orbits also may be affected by RME orthopedic treatment. The aim of the present study was to 3-dimensionally evaluate and compare the volumetric and morphological changes of the orbital cavity after RME performed with tooth-borne (TB) and bone-borne (BB).

Method: CBCT scans from previous published material (TB group=18 subjects, BB group=18 subjects) were included in the present study according to the following criteria: 1) age between 11 and 15 years, 2) CBCT scans of good quality taken prior to the placement of the maxillary expander (T1) and 6 months after its removal (T2), 3) no caries, dental restorations or endodontic therapy of the upper first molars and the first and second premolars, 4) no artifact, 5) absence of pulpal calcification, 6) no previous orthodontic treatment, 7) no systemic disease or usage of medication. Slicer 3D software was used to generate a mask including soft tissues of the orbital cavities and create 3D rendered models from T1 and T2 CBCT scans (.stl). The .stl file including both right and left orbits was imported into Mimics software in order to exactly separate and delimit the orbital volumes by using specific planes cut and landmarks. Finally, the obtained 3D rendered models of T1 and T2 were imported into Geomagic Software in order to perform super-imposition and surface deviation analysis. Volumetric data of right and left orbital cavity at T1 and T2 were also recorded and Student's T test was preliminary used to assess difference in orbital volume changes between both sides. Student's T test was used to compare the volumetric dimension of the orbits between T1 and T2 in each group as well as the difference in the volumetric dimension the orbits from T1 to T2 between TB and BB.

Results: Data of left and right orbits were merged in both groups since no differences were found in volumetric changes between both side ($p > 0.05$). TB and BB group showed no significant changes in orbital volume between T1 and T2 (TB=0,14 cm³, BB=0,18 cm³) ($p > 0.05$). According to the surface deviation analysis, the percentage of matching between orbit T1 and T2 orbit models were respectively 88,5% for TB group and 89,7% for BB group (range of tolerance 0,6 mm).

Conclusions: RME therapy in both form, i.e. with tooth-borne and bone-borne expander, did not affect volumetric and morphological changes of orbital cavity.

Comparison of two protocols for early treatment of dentoskeletal Class III malocclusion: modified SEC III versus RME/FM

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Aim: To compare the short-term cephalometric outcomes of the protocols modified splints, Class III elastics, chincup (SEC III) and rapid maxillary expansion and facial mask (RME/FM) for the early treatment of growing subjects with Class III dentoskeletal malocclusion.

Methods: This retrospective observational study included 20 patients (11 males, 9 females) treated with the modified SEC III protocol and 31 patients (16 males, 15 females) treated with the RME/FM one. The sample was evaluated before (T1, mean age 7.9±1.0 years) and at the end of treatment (T2, mean age 9.0 ± 1.0 years). Statistical comparisons between the two groups were performed with independent sample t tests.

Results: Both the modified SEC III and the RME/FM sample groups showed significantly favorable effects in terms of maxillary advancement (SNA +1.3° and +1.5°, respectively), control of mandibular projection (SNB -0.5° and -0.8°, respectively), and intermaxillary relationships (ANB +1.8° and +2.3°, respectively; Wits +3.4 and +1.9 mm, respectively). The modified SEC III group showed a significantly greater control in the intermaxillary divergency (-2.2°). The main limitations of this study are its retrospective nature and the short-term outcomes.

Conclusions: Early treatment of growing patients with dentoskeletal Class III disharmonies is efficient using either modified SEC III or RME/FM protocols. However, a higher vertical control is achieved with the modified SEC III.

The impact of Covid-19 pandemic in a sample of Italian patients suffering rheumatoid arthritis

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