

REVIEW OF EARLY ORTHODONTIC TREATMENT FOR CLASS III MALOCCLUSION

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Skeletal Class III malocclusion, with its unpredictable and unfavorable nature, has been characterized by a growth pattern with doubtful prognosis regarding orthodontic mechanics, even when performed early. Maxillary intramembranous growth has a better response to orthopedic treatment, based on growth control and redirection, thus contributing for early intervention success. A number of appliances have been used to correct a Class III skeletal discrepancy, but there is little evidence available on their effectiveness in the long term. Similarly, early treatment of Class III malocclusion has been practiced with increasing interest.

The aim: evaluate the effectiveness of orthodontic/orthopedic methods used in the early treatment of Class III malocclusion in the short and long terms.

Methods: the selection criteria included randomized controlled trials (RCTs) and prospective controlled clinical trials (CCTs) of children between the ages of 8 and 14 years on early treatment with any type of orthodontic/orthopedic appliance compared with another appliance to correct Class III malocclusion or with an untreated control group. The primary outcome measure was correction of reverse overjet, and the secondary outcomes included skeletal changes, soft tissue changes, quality of life. The search results were screened for inclusion.

Results: twelve studies, 8 RCTs and 4 CCTs, were included in this review. In the RCT group, only 2 of 8 studies were assessed at low risk of bias, and the others were at high or unclear risk of bias. All 4 CCT studies were classified as high risk of bias. Two RCTs involving 94 participants looked at the comparison between protraction facemask and untreated control. The results for reverse overjet (mean difference, 2.5 mm; 95% CI, 1.21-3.79; $P = 0.0001$) and ANB angle (mean difference, 3.90° ; 95% CI, 3.54-4.25; $P < 0.0001$) were statistically significant favoring the facemask group. All CCTs demonstrated a statistically significant benefit in favor of the use of each appliance.

Conclusions: There is a moderate amount of evidence to show that early treatment with a facemask results in positive improvement for both skeletal and dental effects in the short term. But there was lack of evidence on long-term benefits. There is some evidence with regard to the chin cup, removable mandibular retractor, but the studies had a high risk of bias. Further high-quality, long-term studies are required to evaluate the early treatment effects for Class III malocclusion patients.

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