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## The efficacy of miniscrew-assisted rapid maxillary expansion (MARPE) in non-growing patients: A prospective clinical cohort study

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**Background:** Miniscrew-Assisted Rapid Palatal Expansion (MARPE) is a non-surgical treatment for transverse maxillary deficiency. However, there is a lack of higher-quality prospective clinical publications on its efficacy.

**Objectives:** To investigate the efficacy of MARPE in non-growing patients/late adolescents and adults by assessing success rate, skeletal and dentoalveolar effects, as well as treatment duration and dental and periodontal side-effects.

**Materials and Methods:** The Dutch MARPE Appliance was developed as an individualized, 3D-printed MARPE supported by 4 palatal mini-screws. Patients from the age of 16 onwards with transverse maxillary deficiency were enrolled prospectively. Pre-expansion and immediate post-expansion CBCTs and intra-oral dental scans were acquired and fusion models were used for measurements by two observers individually.

**Results:** Successful expansion was achieved in 32 (out of 34) patients (94.1%), who were included for analysis (6 male, 26 female; mean age: 26.1±8.1 years). Mean total expansion at the maxillary first molars (M1) was 6.56±1.70mm and 4.19±1.29mm at first premolars (P1). The expansion was 57.2% skeletal (3.75±1.02mm), 10.4% alveolar (0.68±1.65mm) and 32.4% dental (2.12±1.58mm) at M1 and 92.2% skeletal (3.86±0.95mm) and 7.8% dental (0.33±1.16mm) at P1, which was both statistically and clinically significant ( $p<0.001$ ). Nasal cavity expansion was 55.2% of the skeletal expansion at M1. Mean expansion duration was 30.9±8.2 days. Buccal dental tipping, clinical crown height increase and buccal bone thinning were observed, but may be considered clinically insignificant.

**Conclusions & Implications:** MARPE is an effective and safe treatment for transverse maxillary deficiency without surgery in non-growing patients.

### Biography

Aldin Kapetanovic is a practicing orthodontist, graduated from the Radboud University Nijmegen, the Netherlands, where he is currently conducting doctoral research on the topic of Miniscrew-Assisted Rapid Maxillary Expansion (MARPE). He has published papers with a focus on innovation in orthodontics in several reputed journals.

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