

## **MINISCREW-ASSISTED RAPID PALATAL EXPANSION: INFLUENCE OF AGE AND BONE MATURITY IN THE DENTOSKELETAL AND PERIODONTAL RESULTS**

**Introduction:** The aim of the present study was to compare the dentoskeletal and periodontal changes after MARPE in patients aged 18-29 year versus patients aged 30-45 years, and to evaluate the midpalatal suture (MPS) bone repair after MARPE in adults. **Methods:** Patients older than 18 years with maxillary transverse deficiency were recruited. Patients were treated with miniscrew assisted rapid palatal expansion using a prefabricated expander with four paramedian miniscrews. The sample comprised 28 subjects with transverse maxillary discrepancy successfully treated with MARPE. Young-Adult Group (YA) was composed by 14 subjects (mean age of 22.8 years, 3 male, 11 female). Middle-Adult Group (MA) was composed by 14 subjects (mean age 36.8 years, 6 male, 8 female). Cone-beam computed tomography (CBCT) was used to evaluate transversal effects and MPS repair. Posterior skeletal effects were measured at the level of the palatine root of the maxillary first right molar, and anterior skeletal effects were measured at the level of the maxillary first right premolar, approximately 15mm anteriorly. Dental effects of first molars and first premolars were measured. Periodontal effects were evaluated measuring alveolar bone thickness of maxillary first molars and first premolars between the apical and medial third of the teeth. Changes were obtained by the difference of measurements achieved. Objective and subjective assessments of MPS repair were performed. Objective assessments were performed measuring MPS bone density at anterior, median and posterior region of the hard palate. Midpalatal suture bone repair was scored 0 to 3 considering, respectively, the complete absence of bone repair in the MPS, the repair of less than 50% of the MPS, the repair of more than 50% of the MPS and the complete repair of the MPS. **Results:** Intergroup comparison for the skeletal, dental and periodontal changes showed no significant differences between both study groups. For the MPS repair, the objective evaluation showed a significant higher bone density at the pre-expansion stage in all palatal regions. Scores 1, 2 and 3 were found in 19.05%, 38.09% and 42.86% of the sample, respectively. The most common region demonstrating absence of bone repair was the middle third. The anterior third of the midpalatal suture was repaired in all patients. **Conclusions:** After MARPE,

middle adults showed similar dentoskeletal and periodontal changes compared to young adults. Most adult patients demonstrated incomplete repair of the midpalatal suture after MARPE. However, adequate bone repair covering more than half of the hard palate extension was observed in 80.95% of the patients.

**Funding:** This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Finance Code 001.

**Keywords:** Palatal Expansion Technique, Skeletal Anchorage, Cone-Beam Computed Tomography, Bone Repair.