

Biographical note

Date and place of birth: April 23, 1975 in Jbeil (Byblos) - Lebanon

Education and work experience:

- Doctor of Dental Surgery (DCD, 1998)
- Master of Orthodontics (DES, 2001)
- Instructor at Saint Joseph University, Beirut, Lebanon (from 2003 to 2007)
- Clinical Assistant at Saint Joseph University, Beirut, Lebanon (from 2007 to 2014)
- Assistant at Saint Joseph University, Beirut, Lebanon (from 2014 to 2016)
- Senior Lecturer at Saint Joseph University, Beirut, Lebanon (since 2016)
- Private practice since 2001

Scientific and professional achievements:

- Published papers: 22
- Lectures & Courses given: 72
- Instructor and Fellow: Charles H. Tweed International Foundation. Tucson, AZ, USA
- Affiliate member: E.H. Angle Society, USA
- Reviewer: American Journal of Orthodontics and Dentofacial Orthopedics, USA
- Editorial Board Member: Clinical Orthodontics (Ortodoncja w Praktyce), Poland
- Visiting Professor: Plastic Aesthetic and Reconstructive Surgery Department at the Oklahoma University, OK, USA
- Consultant for Forestadent, Germany

Canine substitution of congenitally missing maxillary lateral incisors in Class I and Class III malocclusions using skeletal anchorage

Summary:

Introduction

Traditionally, clinicians agree that mesializing the upper dentition in cases of maxillary lateral incisor agenesis (MLIA) is not indicated in the patient with skeletal class I or III, since overconstriction of the maxilla and subsequent detriment to the patient's profile may be apparent side effects of the applied biomechanics. Recent techniques offer new tools to mitigate the undesirable reaction forces, therefore suggesting further exploration of the concept.

Aim

The aim of this prospective cohort study is to evaluate canine substitution supported with the skeletal anchorage as a viable treatment protocol for patients with maxillary lateral incisor agenesis and Class I or Class III skeletal pattern.

Material and Methods

Recruitment Inclusion Criteria: 30 patients meeting the following criteria: 1. MLIA (bilateral or unilateral with a riziform contralateral incisor planned to be extracted, 2. Skeletal class I, class III or class III tendency, 3. Dento-alveolar discrepancy in the mandible less than 5 mm (requiring no extractions).

Data Collection: Prior to initiation of treatment (T1) and at the completion of treatment (T2): Clinical photographs (extra- and intraoral), digital models and x-rays (panorex and lateral cephalogram), and their appropriate digital evaluations: cephalometric analyses (Joe Ceph software, Rocky Mountain Orthodontics, Denver, USA) and PAR indices (OrthoAnalyzer software, 3shape, Denmark).

Intervention: After detailed explanation of advantages and disadvantages of mesialization the canines and lateral teeth versus space opening, and after receiving the patients' consent forms, archwire sequence routine according to Tweed technique, combined with the Rapid Palatal Expander, Temporary Intraoral Skeletal Anchorage Devices (TISAD) and intermaxillary traction

Data Analysis: T1 and T2 Ceph analyses, PAR indices and the patient's smile self-evaluation with Visual Analogue underwent comparison and statistical analyses (SPSS software for Windows (Version 22.0, Chicago, IL)). Normality distribution was evaluated using the Kolmogorov-Smirnov tests. Paired Student t tests or Wilcoxon tests were applied to compare continuous variables before and after treatment; 95% confidence interval of mean measurements for each parameter was also calculated.

Elie W. Amm, DCD, DES

Canine substitution of congenitally missing maxillary lateral incisors in Class I and Class III malocclusions using skeletal anchorage



Department of Dentofacial Orthopedics and Orthodontics
of the Wroclaw Medical University

Promoter

Joanna Antoszevska-Smith, DDS, MSc Orth, PhD

Associate Professor at the Department of Dentofacial Orthopedics and Orthodontics
of the Wroclaw Medical University

Reviewers

Ewa Czochrowska, DDS, MSc Orth, PhD

Adjunct Associate Professor at the Orthodontic Department
of the Medical University of Warsaw

Jimmy Carroll Boley, DDS, MSc Orth

Adjunct Associate Professor at the Baylor College of Dentistry

Wroclaw, 2018

Results:

All main variables changed their values in a favorable manner: significant increase of SNA by 1.3° (p = 0.025), ANB by 2° (p < 0.001) and Wits appraisal by 5.27 mm (p < 0.001). The maxillary dentition moved mesially, which was confirmed by significant increase of U6Ptv (p < 0.001) and the mean value of the molars mesialization reached 5.27 mm. The upper incisors moved forward changing their inclination insignificantly: U1-SN by 0.8° (p = 0.533), U1-NA by 0.27° (p = 0.820).

Meaningful increase of E-LL by 1.34 mm (p < 0.001) and decrease of LL-UL by 1.87 mm (p < 0.001) fairly changed the lip profile, although the upper lip remained unaffected by biomechanics: no significant changes (p > 0.05) of E-UL and NL-Angle parameters occurred.

Both the PAR index and the weighted PAR index were significantly decreased after the orthodontic treatment (p < 0.001), confirming that the occlusion was evidently corrected.

The mean VAS scores have significantly increased after orthodontic treatment (p < 0.001) proving that patients highly appreciated their smile esthetics achieved after my treatment protocol.

Conclusions:

This study proved that closing the space in Class I or Class III cases using TISADs in the mandible along with Class III elastics, results in satisfactory outcomes. Mesialization of the maxillary teeth secures proper occlusion evidenced by reduced PAR index and correction of the intermaxillary discrepancy results in attaining beneficial, significant cephalometric changes after the treatment. Harmonious soft tissue profile before the treatment may be maintained, and improved after the treatment in cases when it is initially discordant. Enhanced smile esthetics after orthodontic treatment for all patients in the study group is also indisputable.

Summing up, canine substitution may be safely offered to patients with Class III skeletal pattern and agenesis of maxillary lateral incisors.