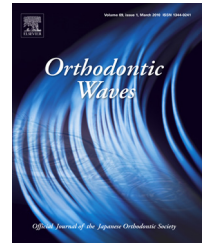


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## Case report

# An adult case of skeletal Class II with high mandibular plane angle treated by anterior rotation of the mandible with miniscrew anchorage

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## ARTICLE INFO

## Article history:

Received 26 September 2016

Received in revised form

18 October 2016

Accepted 20 October 2016

Available online xxx

## Keywords:

Anterior rotation of the mandible

Camouflage treatment

Maxillary dentition intrusion

Miniscrew anchorage

Skeletal Class II

## ABSTRACT

This case report illustrates the successful treatment of anterior rotation of the mandible due to intrusion of the entire maxillary arch, using miniscrew anchorage in an adult. A woman, aged 24 years and 8 months, had a convex profile, which she desired to improve. She was diagnosed with a skeletal Class II jaw-base relationship with a high mandibular plane angle. After extraction of four premolars, three miniscrews were implanted at the median palatine suture and the distal alveolus of the maxillary lateral incisors. Anterior rotation of the mandible was achieved by intrusion of the entire maxillary arch. The total active treatment period was 32 months. Acceptable occlusion and an improved facial profile were maintained after 29 months of retention.

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## 1. Introduction

Treatment of skeletal Class II malocclusion with a high mandibular plane angle in adults requires anterior rotation of the mandible by orthodontics alone or with orthognathic surgery to reduce skeletal discrepancy and overjet. In conventional orthodontic treatment, these patients require high-pull headgear and/or a stabilizing lingual arch to prevent

molar elongation. Although those procedures are considered acceptable treatment, some adult patients with long facial-type Class II experience a slight downward and backward rotation of the mandible during conventional orthodontic treatment [1]. Recently, endosseous implants [2], screws [3–5], and miniplates [6] have been used for skeletal anchorage. These materials can provide stationary anchorage for various tooth movements, without requiring active patient compliance, which was not possible with traditional orthodontic

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<http://dx.doi.org/10.1016/j.odw.2016.10.008>

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methods. Several case reports have shown that skeletal anchorage is an effective strategy for treatment of adult patients with skeletal Class II malocclusion after extraction of the first premolars [3,7]. Additionally, miniscrew anchorage is useful for tooth intrusion, as it can apply a light continuous force of a set magnitude, without causing reciprocal movements of other teeth [8]. However, it is unknown which method is better for treating skeletal Class II malocclusion by camouflage treatment [1,3,5,7].

We have demonstrated successful camouflage treatment of an adult patient with a skeletal Class II malocclusion by using three miniscrews for orthodontic anchorage. Moreover, we have described the advantage of the treatment by intrusion of the entire maxillary arch, using skeletal anchorage, in skeletal Class II patients.

## 2. History

A woman, aged 24 years and 8 months, presented with a chief complaint about her lateral profile and a prominent maxillary incisor. Her medical history showed no contraindications for orthodontic therapy. Facial photographs showed symmetry, and her profile was somewhat convex because of a retrognathic mandible, with an increased lower facial height. An

acute nasal-labial angle, strain in the circumoral musculature upon lip closure, and a gummy smile were observed (Fig. 1A). Oral photographs and a dental cast revealed an Angle Class I molar relationship with a 4.8-mm overjet and 1.1-mm overbite. The upper dental midline coincided with the facial midline, but the lower midline was shifted to the right by 0.5 mm. Mild crowding was present at the mandibular incisors. Arch length discrepancies of 1.5 mm (maxilla) and 4.0 mm (mandible) were present. The maxillary and mandibular dental arch forms were ovoid type (Fig. 2A). When compared with Japanese norms [9,10], lateral cephalometric analysis revealed a skeletal Class II jaw-base relationship with an ANB angle of  $5.2^\circ$ , due to a slightly retrognathic mandible, and a high mandibular plane angle (MP to SN) of  $43.9^\circ$ . The interincisal angle was  $105.4^\circ$ . The angle of the mandibular incisor to the mandibular plane was labially inclined by more than 1 S.D. ( $103.7^\circ$ ). The maxillary central incisors and first molars were in a vertically normal position (U1/PP=33.1 mm, U6/PP=25.1 mm; Fig. 4, Table 1). Panoramic radiographs indicated the existence of upper and mandibular third molars and mesial inclination of the lower bilateral third molars (Fig. 3A). Functionally, she had no symptoms of temporomandibular disorder, such as clicking or pain with jaw opening.

Based on this information, the patient was diagnosed with an Angle Class I malocclusion, skeletal Class II jaw-base



Fig. 1 – Facial photographs.

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