

A New Method for correction of a Canted Lower Incisal Plane using Mini-screw

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ABSTRACT

The dynamic display zone includes lateral, vertical, and anteroposterior aspects, as well as the canted incisal and occlusal plane. Lower incisal cant is an important factor affecting smile esthetics. However, canted lower incisal plane can be corrected using determinate force systems. A new method for cant correction was invented using miniscrew and cantilever principle. This case report demonstrates a 16-year-old male patient with lower incisal cant was successfully treated in this manner in a relatively shorter treatment time.

INTRODUCTION

The most important esthetic goal in orthodontics is to achieve a “balanced” smile¹, which can be best described as an appropriate positioning of the teeth and gingival scaffold within the dynamic display zone. Smile design and mechanotherapy must take into account the presence of incisal cant and occlusal cant. A differential diagnosis between an incisal cant and an occlusal cant is of primary importance, because while the former can be corrected with well-controlled, determinate force systems,²⁻⁴ the latter usually requires controlling the eruption of the buccal segments in growing individuals or, in adults, can often be resolved only through orthognathic surgery.^{5,6} This article demonstrates use of miniscrew by which an incisal cant can be leveled to achieve an ideal occlusion with a symmetrical overbite.

CASE REPORT

A 16-year-old male in the permanent dentition presented with the chief complaint of an anterior crossbite. He had a Class II division 1 malocclusion (Fig. 1). The maxillary dental midline shifted 2mm to the left, resulting in a unilateral crossbite. The patient also showed a slight cant of the lower incisor segment.



Fig.1: Intraoral Frontal view . Canted lower incisal plane masked by unilateral crossbite.

Comprehensive orthodontic treatment was begun with preadjusted edgewise appliance. MBT 0.022 slot was bonded for leveling and alignment, with a continuous .014" nickel titanium wire placed in the upper and lower arch. At that point, a significant mandibular cant became obvious.

Three months later, miniscrew was inserted between lower second premolar and first molar on left side. An .017" × .025" Beta Titanium cantilever wire with helix was bent down into the mucobuccal fold, from miniscrew to the main

archwire between the central and lateral incisors.(Fig 2,3) This point of attachment, off-center from the lower midline, was selected to obtain not only an intrusive force, but a moment around the center of resistance of the anterior segment.



Fig.2: Frontal View before incisal cant correction



Fig. 3: Right Lateral View

To prevent any spaces from opening, lower anterior segments were ligated together.

After 3 weeks, a significant amount of intrusion and rotation of the anterior segment had been achieved, but the incisal cant was not fully corrected. The cantilever was then reactivated, thus increasing the magnitude of the moment in relation to the center of resistance of the anterior teeth. After 2 months, lower incisal cant was fully corrected and further orthodontic treatment was continued for remaining space closure.(Fig.4)



Fig.4: Frontal View After incisal cant correction

DISCUSSION

Segmented arches and cantilevers can effectively correct problems, such as a canted incisal plane, that would be difficult to resolve by any other means. By understanding and controlling side effects, the clinician can achieve an ideal result in a relatively short time.

REFERENCES

- [1]. Janzen E. A balanced smile: a most important treatment objective, *Am J Orthod.* 1977;72:359–372.
- [2]. Legan, H. and Conley, R.: Biomechanical factors in surgical orthodontics, in *Biomechanics and Esthetic Strategies in Clinical Orthodontics*, ed. R. Nanda, Elsevier, St. Louis, 2005, pp. 310-329.
- [3]. Nanda, R. and Margolis, M.J.: Treatment strategies for midline discrepancies, *Semin. Orthod.* 2:84-89, 1996.
- [4]. Nanda, R. and Uribe, F.: Individualized orthodontic treatment planning, in *Biomechanics and Esthetic Strategies in Clinical Orthodontics*, ed. R. Nanda, Elsevier, St. Louis, 2005, pp. 74-93.
- [5]. Burstone, C. and Marcotte, M.: The treatment occlusal plane, in *Problem Solving in Orthodontics, Quintessence*, Chicago, 2000, pp. 31-50.
- [6]. Proffit, W. and Turvey, T.: Dentofacial asymmetry, in *Contemporary Treatment of Dentofacial Deformity*, ed. W. Proffit, R. White, and D. Sarver, Elsevier, St. Louis, 2003, pp. 574-644.