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## Management of Occlusal Cant using intrusion arch: A case report

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### Abstract

A canted occlusal plane is the cause of unaesthetic smile, and also represents a challenge, due to the complex orthodontic procedures involved in its treatment. LeFort I osteotomy with asymmetric maxillary impaction is often used to correct this problem. However, canting caused by extruded teeth can be corrected easily with normal orthodontic appliances like intrusion arches. The correction occurs through intrusion of the extruded teeth on one side of the maxilla. A 41-year-old female with canted maxillary occlusal plane was treated in this manner showing the possibility of correcting occlusal plane canting with intrusion arch thus avoiding surgical intervention.

**Keywords:** Occlusal Cant, intrusion arch, adult patient

### Introduction

Occlusal plane is the plane that could be established if a line were drawn through all the buccal cusp tips and incisal edges of the mandibular teeth, continuing across the arch to include the buccal and lingual cusp tips of the opposite side [1]. Occlusal plane canting in the vertical plane is one of the parameters affecting smile esthetics and originates from facial asymmetry and/or vertical position asymmetry of the right and/or left quadrants of the dental arches [1].

The perception of occlusal cant varies between lay person, general dentist and orthodontist. A 2° of canting is acceptable to lay person, general dentist and orthodontist. Even if the canting is 3°-4°, it is acceptable to lay person as they fail to detect, but when canting is more than 4° it is noticeable to lay person and this is when a patient seeks orthodontic treatment [3].

A canted occlusal plane is the cause of unaesthetic smile, and also represents a challenge, due to the complex orthodontic procedures involved in its treatment [4].

Occlusal cant can be treated by intrusion of teeth or extruding the teeth on opposite side- using intrusion or extrusion arches, implants, elastics etc. It can also be treated using surgical procedures [2].

In this case report, we describe an approach for correcting a canted occlusal plane using only intrusion arch without implants; the possibility of avoiding LeFort I maxillary osteotomy in patients with significant facial asymmetry makes this an attractive treatment alternative.

### Case report

#### Diagnosis

A 41-year-old female patient reported in Orthodontic Department with a chief complaint of unaesthetic smile. Extra oral examination revealed, the patient has convex profile, incompetent lips and presence of occlusal cant leading to unaesthetic smile. Intraorally, the patient had proclined upper and lower incisors, mild crowding present in upper and lower anteriors, anterior deep bite, increased overjet and missing 17 and 36. Gingival recession present in 11, 21 and 23.



Fig 1: Pre- Treatment Extra oral Photographs



Fig 2: Pre-Treatment Intra oral photograph

On radiographic examination, orthopantomogram reveals missing 17 and 36 and fair bone support. The Lateral cephalogram reveals Skeletal Class II relations (ANB angle = 8°) as the mandible is retrusive (SNB = 72°). Proclined upper incisors (UI- SN = 117°). Protrusive upper and lower lip.

Table 1: Pre- treatment cephalometric analysis

	Pre-treatment values	Normal values
SNA	80°	82°±2°
SNB	72°	80°±2°
ANB	8°	2°
FMA	28°	25°
UI-SN	117°	102°
LI-MP	99°	95°
Nasiolabial angle	100°	102°±8°
U lip- E line	0mm	-4mm
L lip- E line	3mm	-2mm

**Treatment objectives**

The treatment objectives for this patient were

- Correction of the occlusal cant by intruding the extruded teeth,
- Improve the smile,
- Correction of anterior deep bite,
- To alleviate crowding
- To improve the facial appearance.

**Treatment alternatives**

First alternative was to correct the occlusal cant with Lefort 1 surgery. This treatment alternative was declined by the patient as she did not want to undergo any invasive procedure.

Second alternative was to correct the cant by intruding the teeth on right side using implants. This treatment plan was also not accepted as it was difficult to place implant due root proximation between the incisors.

The third treatment alternative was to intrude the extruded teeth on right side with intrusion arch. To correct the proclination all four first bicuspid were to be extracted.

**Treatment plan**

After review of treatment options, the patient accepted the following treatment plan.

1. Non extraction treatment plan

2. Alleviate the crowding
3. Intrude the maxillary right teeth with intrusion arch

**Treatment progress**

Treatment began by bonding both arches with 0.022 × 0.028-in pre adjusted edgewise ceramic brackets. Initial leveling was accomplished in 4 months with 0.014-in, 0.016-in and 0.018-in sectional round nickel-titanium wires followed by sectional rectangular wire. A 19×25 SS sectional wires was placed and intrusion arch made of 17×25 TMA was tied between right lateral incisor and canine to intrude the teeth on right side.



Fig 3: Intrusion arch tied between 12&13

The intrusion arch was continued for 5 months and was activated every month. After 5 months the teeth on the right side were intruded and the smile was improved.



Fig 4: Improved smile

The occlusal cant and deep bite were corrected. The patient required extraction for correcting the proclination of incisors, but was not willing due to increase in treatment time. Hence a three piece intrusion arch was used to retract upper incisors and maintain the intrusion that was achieved.

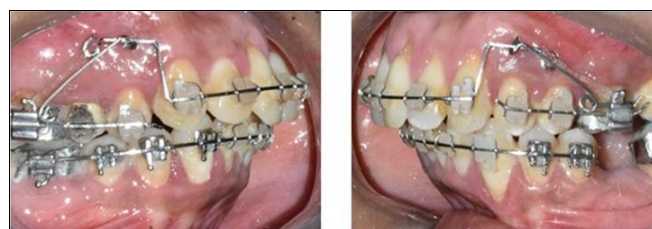


Fig 5: Three piece intrusion arch

After 4 months of retraction with three piece intrusion-retraction arch, the brackets were debonded and fixed lingual retainer were placed in upper and lower arch.



Fig 6: Post Treatment Intra oral photograph



**Fig 7:** Post Treatment Extra oral Photograph

## Discussion

Vertical asymmetries have constantly represented a greater complexity in the orthodontic treatment of adult patients. Orthognathic surgery, orthodontic therapy, or a combination of orthognathic surgery and orthodontic therapy are used as treatment alternatives in the compensation of occlusal cant [5]. Usually in cases of slight deviations, with the use of conventional mechanics, these asymmetries can be treated in a limited way. Compensation of occlusal cant with orthodontic therapy involves arch intrusion/extrusion and use of skeletal anchorage. In the anterior region, conventional treatment of occlusal cant caused by intruded teeth is based on extrusion of the intruded segment with intermaxillary elastics. Application of intermaxillary elastics causes extrusive forces to both the maxillary and mandibular arches [6]. Therefore, this technique is limited in cases where occlusal cant is caused by both extruded teeth on one side and intruded teeth on the other side. Usually, occlusal cant is localized in the upper and lower arch or anterior or posterior segment. A combination of deep bite and occlusal cant treatment is needed in patients with anterior occlusal cant and deep bite malocclusion. Application of a 0.017 × 0.025 titanium molybdenum alloy intrusion arch to the anterior segment of the side with extruded teeth allows improvement of both occlusal cant and the deep bite [6]. Conventional mechanics basically consist of characteristics of extrusive mechanics. On the other hand the TAD is generally located apically compared with the brackets and in this location the mechanics are advantageous in achieving intrusion [7]. But in our case patient did not wanted any invasive procedure. Hence, intrusion arch was used to correct the occlusal cant.

## Conclusion

Occlusal plane canting is one of the parameters affecting smile esthetics, which originates from facial asymmetry and/or vertical position asymmetry of the right and/or left quadrants of the dental arches. To achieve satisfactory treatment results in individuals with occlusal cant, the etiologic factors of occlusal cant should be examined, the classification of occlusal cant should be considered, and the benefits of alternative treatment plan should be discussed.

## References

1. Kasrovi PM, Meyer M, Nelson GD. Occlusion: an orthodontic perspective. *J Calif Dent Assoc.* 2000 Oct;28(10):780-90.
2. Şenışık NE, Hasipek S. Occlusal Cant: Etiology, Evaluation, and Management. *Turkish J Orthod.* 2015;27(4):174-80.
3. Olivares A, Vicente A, Jacobo C, Molina SM, Rodríguez A, Bravo LA. Canting of the occlusal plane: perceptions of dental professionals and laypersons. *Med Oral Patol Oral Cir Bucal.* 2013 May 1;18(3):e516-20.
4. Jeon YJ, Kim YH, Son WS, Hans MG. Correction of a

canted occlusal plane with miniscrews in a patient with facial asymmetry. *Am J Orthod Dentofacial Orthop.* 2006 Aug;130(2):244-52.

5. Farret MM. Occlusal plane canting: a treatment alternative using skeletal anchorage. *Dental Press J Orthod.* 2019 Jan-Feb;24(1):88-105.
6. Kang YG, Nam JH, Park YG. Use of rhythmic wire system with miniscrews to correct occlusal-plane canting. *Am J Orthod Dentofacial Orthop.* 2010;137(4):540-547.
7. Park YC, Lee SY, Kim DH, Jee SH. Intrusion of posterior teeth using mini-screw implants. *Am J Orthod Dentofacial Orthop.* 2003;123(6):690-694.