CLASS II MOLAR CORRECTION BY MAXILLARY MOLAR DISTALIZATION WITH AN IMPLANT SUPPORTED SLIDING JIG- A CASE REPORT

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ABSTRACT:
19-year female presented with skeletal Class I jaw base with bilateral Class II molar relationship with crowded both arches and incisors upright over basal bone. Distalization was planned in upper arch to correct Class II molar relation and upper crowding. Implant supported sliding jig was used to distalized upper molars. Molars were distalized by 5 mm in a span of 4 months. Post treatment Class I molar relationship was achieved bilaterally and incisor proclination reduced. Post treatment cephalogram showed minimal changes in the vertical dimension of face at the end of treatment. The total treatment ended in 19 months.

INTRODUCTION
Crowding and loss of space in the maxilla and the mandible, caused by mesially drifted molars and disproportion between tooth and jaw size, are problems frequently encountered in orthodontics. Correction of Class II malocclusion has always been a challenge for the orthodontist. Extraction and non extraction methodologies have been used to correct the same condition.1 Molar distalization can be initiated when extraction of maxillary teeth is not indicated and mandibular tooth size/arch perimeter does not permit mesial movement of lower molars.2 With extra oral mechanisms implementing molar distalization, the success of the treatment depends upon patient’s compliance.2 Since the early 1980s, therapeutic approaches and devices have been focused increasingly on options for correcting malocclusions in which patient compliance could be almost ignored. As a main approach of noncompliance appliances, intra arch devices for molar distalization have been introduced. Various Distalization appliances are headgear3, cetlin appliance4, TPA5,ACCO appliance6, Pendulum appliance7, Wilson biometric distalizing arch8,9, fixed functional appliance10,11, distal jet12,13,first class appliance14, repelling magnets15, NiTi coil spring16, superelastic NiTi wires17, K loop.18 However, many of these methods can also cause mesial movement of the maxillary premolars and anterior. In addition, the loss of anterior anchorage often leads to relapse of the maxillary molars during the correction of the canine relationship, overbite, and overjet.19 Many of the distalization techniques use Nance palatal arch to avoid anterior anchorage loss during molar Distalization.

CASE REPORT:
This case report describes unilateral distalization of maxillary molar with Pendulum appliance in Class II subdivision malocclusion. 19-years Female presented with the chief complaint of irregular front teeth. No relevant medical history was present. On clinical appraisal, no abnormality was detected with tempromandibular joint. Facial form was mesoprospic and mild convex soft tissue profile. (Fig 1) Intraorally, Class II molar relation on the left side and on the right side, 2 mm overjet and 80 % overbite. Lower incisors were crowded and upright over basal bone. Upper midline was shifted to right side by 3 mm in relation to facial midline. (Fig 2) Panoramic radiograph showed third molars were in their eruptive stage. The lateral cephalogram revealed ANB of 2° and Wits appraisal of -1 mm, indicative of a Class I skeletal relation. The skeletal pattern was horizontal as evidenced by the SN-MP angle of 31°. The patient had proclined maxillary incisors with U1-SN 109°, normally inclined lower incisors with L1-MP 97°. (Fig 3) The distance between Ricketts’ PTV line and distal surface of maxillary first molar was 18 mm.

TREATMENT OBJECTIVES:
Treatment objectives were to correct Class II molar and canine relation, dental midline correction in relation to facial midline, to reduce crowding. Other objectives were to correct overjet and overbite.
TREATMENT PLAN:
Distalization of maxillary molars using a sliding jig. The distance between Ricketts’ PTV line and distal surface of maxillary first molar was 18 mm. According to Ricketts’, minimum distance required is 17 mm. So adequate space was available which made distalization possible without producing crowding in posterior segment. Later, the patient was treated by fixed appliance therapy.

TREATMENT PROGRESS:
Pendulum appliance was fabricated and inserted onto the banded maxillary first molars. (Fig 4) The appliance was activated by 90°, which delivered approximately 240 grams of force. The molar started showing distal movement, the molars showed a distalization of 5 mm by the end of four months. (Fig 5) After the desired distalization was achieved, 0.022×0.028” MBT brackets were bonded.

TREATMENT RESULTS:
A good occlusion was established resulting in bilateral Class I molar and canine relationships along with normal overjet and overbite. Maxillary first molar was distalized by 5 mm in 4 months. Upper dental midline was coinciding with facial midline. Position and inclination of the upper and lower incisors were normalized. Nasolabial angle presented within the normal range.

DISCUSSION
Unilateral Class II molar was successfully treated with Pendulum appliance. Unilateral distalization had the advantage of stronger anchorage because the contralateral side was utilized as an anchorage unit as well we fabricated helical spring with stainless steel wire in right quadrant. Unilateral distalization seems to be associated with less anchorage loss and less tipping of the molar than bilateral distalization. Scutzey showed an effective distal molar movement and less anchorage loss of front teeth are advantages of unilateral distalization. Influence of second molar on the distal movement of the first molar remains a matter of debate. Some authors reported that presence of second molars increases treatment duration, produces more tipping of molars, and more anterior anchorage loss. On the contrary, some authors have reported that presence and position of second molars does not affect the amount and type of maxillary first molar distal movement.

REFERENCES