CORRECTION OF BUCCAL CROSSBITE WITH MICRO IMPLANT ANCHORAGE

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The normal eruption pattern of the maxillary second molar tilts the long axis of the tooth in a mesio-palatal direction. Due to inadequate arch length, maxillary second molar may not achieve upright position. The palatal cusp of the maxillary second molar may become too prominent occlusally and cause buccal crossbite. Another cause for buccal crossbite is insufficient growth of the maxillary tuberosity. Cureton studied the incidence of malaligned second molars in untreated individuals. He observed that maxillary second molars erupted more buccally than did mandibular second molars. Most of the malposed maxillary second molars were inclined with their roots to the mesial and their crowns to the distal. Due to distalization procedure, sometimes the maxillary second molar erupts with excessive disto-buccal inclination.

In adults, it is usually difficult to correct molar crossbite because of lack of space in the dental arch. Buccally erupted maxillary second molars must be moved intruded and moved palatally to achieve the correction.

Various techniques have been applied to correct the buccal crossbite of maxillary second molars. This case report demonstrates the effectiveness of microimplants used to correct maxillary second molars buccal crossbite in an adult.

Case Report
A 21-year-old female presented with bilateral buccal crossbite of maxillary second molars. She had Class II div I malocclusion with posterior crowding in upper and lower arches. The maxillary second molars were buccally erupted, while the lower second premolars and second molars were lingually erupted. All the third molars were impacted [Fig 1]. 0.022" MBT Prescription brackets were bonded and initial aligning and leveling was carried out [Fig 2].

Orthodontic Abso Anchor microimplants developed by Dentos INC* were used for anchorage. These implants were placed on the palate between the first and second premolars on both the sides [Fig 3]. Cantilever springs made of 0.016" S.S were inserted into the microimplant heads. Elastomeric force was applied from the buccal surface of second molars to the springs [Fig 4A, 4B]. After alignment, full size 19x25" S.S wire was engaged into the second molar tubes [Fig 5 & Fig 6].

Discussion
As there was lack of space in the maxillary tuberosity area, upper third molars were extracted before correcting second molars which were in buccal crossbite. Microimplants were used to correct the bilateral buccal crossbite. Implants were loaded indirectly through the cantilever spring. Buccal traction with the help of Elastomeric chain from both maxillary right & left second molars was applied. This force intruded the maxillary second molars and moved them palatally [Fig 7]. Buccal cross bite was corrected within a period of nine months [Fig 8].

Several factors were taken into account while planning the treatment of bilateral posterior cross bite. Though the patient had class II div I malocclusion with increased overjet, she had a good soft tissue profile. She was keen on correction of crossbite which was causing cheek bite. Pretreatment cephalometric analysis revealed that there was increased inclination of both the upper and lower incisors [Table 1]. Extraction of premolars was required to achieve the correct axial inclination of incisors. Retraction of upper incisors was not planned as she had an obtuse Naso-

* Abso Anchor from Dentos Inc Dong Bu B/D2F#22, 251, 4Ga, Dong-In Dong, Jung-gu, Taegu, Korea.
Fig. 1 21-year-old female with Class II division 1 malocclusion and maxillary second molars in buccal crossbite before treatment.

Fig. 2 Fixed appliance with 0.022" MBT during initial aligning and leveling, 0.016" Sentalloy engaged in upper and lower arches.

Fig. 3 Palatal micro implants with cantilever springs made of 0.016" S.S.

Fig. 4 Elastomeric force applied from the buccal surface of second molars to the springs. A - Right side  B- Left side

Fig. 5 0.018" S.S arch wire engaged in upper and lower arches.

Fig. 6 19 x 25" S.S arch wire engaged in upper and lower arches.
Table 1
CEPHALOMETRIC DATA

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>PRE-TREATMENT</th>
<th>PRE-FINISHING</th>
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<td>77°</td>
</tr>
<tr>
<td>SNB</td>
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<td>4°</td>
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<td>IMPA</td>
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<tr>
<td>Lower lip to E-line</td>
<td>3mm behind E-line</td>
<td>3mm behind E-line</td>
</tr>
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Pre-finishing cephalometric analysis revealed that the lower incisor inclination has increased. Pretreatment cephalometric values show that the lower incisors were already proclined [Table 1]. The case was treated non-extraction; hence there is increase in the inclination of lower incisors. Overall superimposition demonstrated increase in the inclination of lower incisors and slight opening of mandibular plane angle [Fig 9].

Fig. 7 Schematic diagram illustrating the vertical vector of force (intrusive) and horizontal vector of force (palatal).
Fig. 8 Correction of the buccal crossbite of maxillary second molars.
Fig. 9 Superimposition
labial angle, thin upper lip and a straight profile. Third molars extraction was planned to gain space for the alignment of the second molars. The treatment objective was correction of bilateral crossbite. The consequence of not extracting premolars was increase in lower incisor inclination and no change in molar relationship.

Conclusion
Conventional techniques used to correct buccal crossbite of maxillary second molars in an adult usually are time consuming. Patients will be uncomfortable with the use of transpalatal arch and other attachments. With the use of microimplants, treatment was much faster, easier and comfortable to the patient.

Acknowledgement
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References