Nonsurgical Approach for Treatment of An Extreme Severe Anterior Open Bite in an Adult Patient : a case report

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Introduction

Anterior open bite malocclusion (AOB) is considered one of the most difficult problems to treat. The cause of the Open bite is multifactorial, which can develop from genetic and/or environmental factors. Open bite is generally classified in two categories: a dentoalveolar and skeletal malocclusion.

Treatment for open bite varies from observation or simple habits control to complex surgical correction. By reason of its multifactorial etiology and high tendency to relapse, Skeletal AOB is concerned as one of the most challenging in orthodontic treatment especially with nonsurgical approach.

Clinical Case

Asian female, 25 years old with chief complaint of problems in chewing food and esthetics. He had a tongue thrusting swallowing pattern and history of mouth breathing.

Clinical and radiographic findings (figure1)

1. Skeletal classI (ANB=3.5, FMA=2), class I malocclusion
2. AOB=8mm, clockwise rotation of mandible, Increased LAFH, Increased UPDH, Increased inter incisal angle
3. Tongue thrusting habit (forward rest tongue posture)

Treatment plan

1. Habit control and correction with bonded shark tooth-like spurs (JAWs) and tongue training
2. Vertical (molar intrusion) with iPANDA intrusion

Alternative treatment plan

1. Combined orthodontic-surgical plan
2. Extraction of four premolars or molars followed by anterior retraction and mesialization of posterior teeth
3. Extrusion of the anterior and posterior teeth with intermaxillary elastics to close the open bite

Figure 1. Initial photographs and radiograph, AOB with tongue thrusting

Figure 2. JAWS

Figure 3. Various application of iPANDA

Figure 4. Tracing superimposition of treatment progress

Treatment progress

Treatment modalities started with pretreatment phase with JAWs to correct the forward resting tongue posture and function, to minimize the risks of open bite relapse. Tongue thrusting habit was improved and maintained.

Active orthodontic treatment for this complex cases mainly performed with iPANDA appliances (invented by Suzuki and Suzuki) (figure3)

Placement of two midpalatal miniscrews for iPANDA fabrication, two buccal miniscrews in upper arch and a buccal miniscrew in lower arch was implanted to assist intrusion of maxillary and mandibular molars.

Maxillary molar intrusion was performed 2.5 mm in first molar area using iPANDA combined with buccal miniscrews. From intraoral photos and cephalometric analysis, there was a 9.5 mm improvement in the overbite, from -8 mm to 1.5 mm. There was improvement in the apical base relationship [ANB angle] from 3° to 1.5°, and an increase in mandibular protrusion [SNB angle] from 82.7° to 84.7°, as result of the counterclockwise rotation. There was no obvious evidence of clinically significant root resorption.

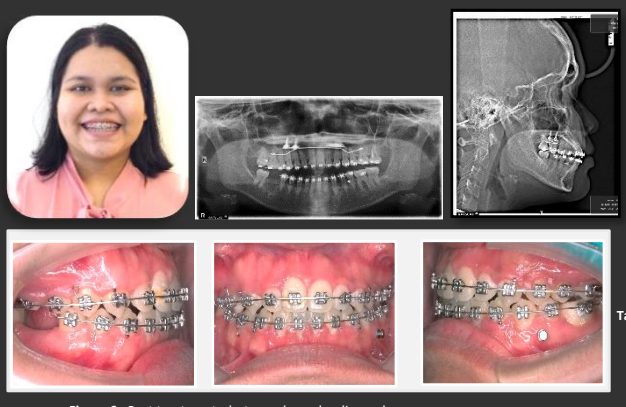

Figure 6. Post treatment photographs and radiographs

	Initial	Progress
SNA	86.0	85.0
SNB	82.5	84.5
ANB	3.5	1.5
FMA	27.0	25
U6-PP	25.0	22.5
L1-MP	106.0	98.0
OJ(mm)	3.5	2.0
OB(mm)	-8.5	1.5
U1-NA	33	25

Table A. Cephalometric data of treatment progress

Discussion and Conclusion

The selected nonsurgical approach involved the intrusion of the maxillary molars using skeletal anchorage. This approach had potential to afford positive facial changes synchronized with the open bite being corrected.
A harmonious facial balance, improved smile, and good interdigitation was successfully achieved biomechanically in 25 months active phase of orthodontic treatment.

Although in active phase of treatment, it was achieved objectives of treatment. However, an appropriate retention method is the most important key to enhances the long-term stability of the treatment.

References

1. Suzuki, Eduardo Yugo & Suzuki, Boonsiva. (2013). Maxillary molar distalization with the Indirect Palatal Miniscrew for Anchorage and Distalization Appliance (iPANDA). Orthodontics : the art and practice of dentofacial enhancement. 14. e228-e241. 10.11607/ortho.982.
2. Suzuki, Eduardo Yugo & Suzuki, Boonsiva. (2016). The Indirect Palatal Miniscrew Anchorage and Distalization Appliance. Journal of clinical orthodontics : JCO. 50. 80-96. .