



Changes in Incisor Position Following

Tongue-Training Therapy using

Bonded Shark-tooth-like Spurs in Adult Anterior Openbite



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Introduction

Anterior open bite (AOB) correction is one of the most challenging malocclusions to manage because of the high chances of relapse. Although the cause of AOB is multifactorial, tongue dysfunction plays an important role in the features of the malocclusion. Therefore, correction of the tongue position and function results in stable outcomes. Recently, Bonded Shark-tooth-like spurs (JAWs) (Fig. 1) have been introduced for the treatment of patients with AOB.



Fig. 1 JAWs

Aim of Study

To evaluate the dentoalveolar effects of the central incisors following tongue-training therapy using JAWs in adult patients with AOB.

Materials and Methods

3-D digital dental casts of 21 adult patients (mean age 23.05 +/- 4.8 years) diagnosed with AOB with severe tongue thrust habits were collected during initial examination (T0) and one month after using JAWs (T1) for tongue-training. A retrospective study was conducted to measure changes in tooth position at the incisal edges of the maxillary and mandibular central incisors using superimposed 3-D digital dental casts (Figs. 2, 3, 4). The amount of tooth displacement (Total change, T; Vertical, V; Anteroposterior, AP) was analysed using the T-test. The size of the JAWs and the amount of tooth displacement were compared using Pearson's correlation.

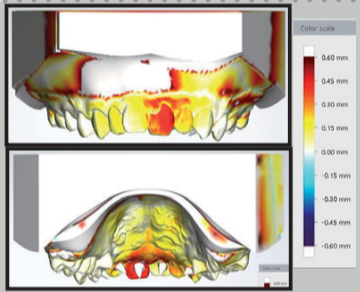


Fig. 2 Amount of change on 3-D digital dental casts.

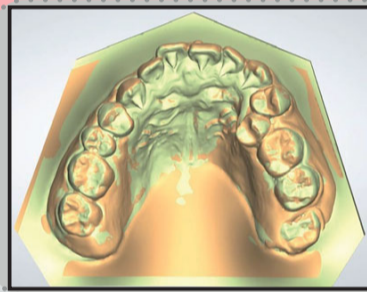


Fig. 3 Superimposed 3-D digital dental casts (T0, yellow; T1, green).

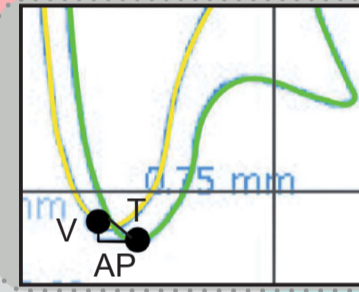


Fig. 4 Measurement of 3-D digital dental casts (T, Total change; V, Vertical change; AP, Anteroposterior change).

Results

⊙The measurements revealed that there was tooth displacement (Fig. 5) in the V and AP directions.



Fig. 5 Change in incisors position following use of JAWs.

⊙The amount of tooth displacement in the V and AP directions were 0.18 +/- 0.03 mm and 0.23 +/- 0.04 mm, respectively (Fig. 6).

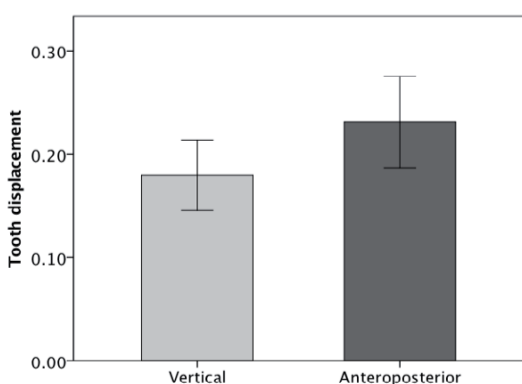


Fig. 6 Amount of tooth displacement in V and AP directions.

⊙The amount of tooth displacement of the mandibular incisors was significantly greater than that of the maxillary incisors (Fig. 7).

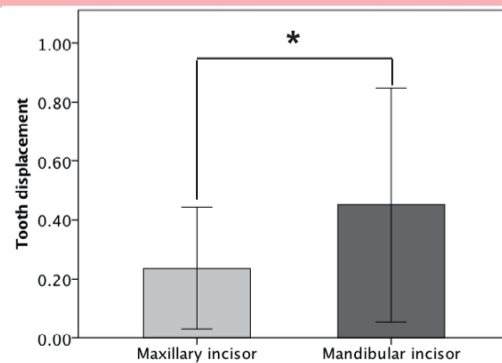


Fig. 7 Amount of tooth displacement compared between the maxillary and mandibular incisors using the Independent T-test (*p< 0.05).

⊙There was a moderate positive correlation (R=0.504) between the size of JAWs and tooth displacement (Fig. 8).

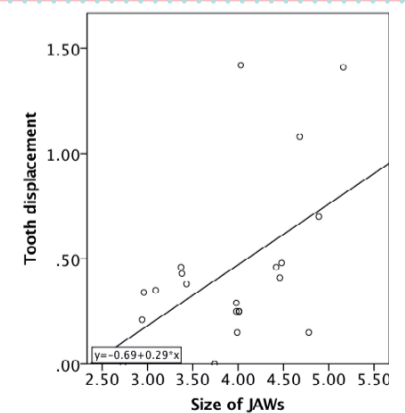


Fig. 8 Correlation between size of JAWs and tooth displacement.

Discussion and Conclusions

The use of JAWs is an effective therapy in adult patients with tongue-induced AOB (Fig. 9). Changes in tongue position and function can induce dental changes in adults. The size of JAWs is one of the factors that correlate with tongue adaptation.

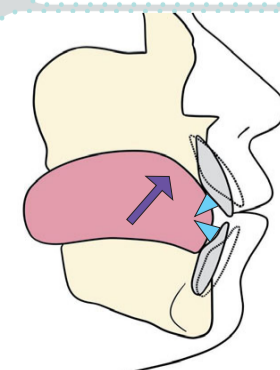


Fig. 9 Diagrammatic representation of dental changes after tongue therapy with JAWs.