Case Report

Integrating orthodontics and oral myofunctional therapy for patients with oral myofunctional disorders

Osamu Takahashi (*Nihon University School of Dentistry at Matsuda*)

Tadamasa Iwasawa (*Nihon University School of Dentistry at Matsuda*)

Miyako Takahashi

correa Franco

Suggested Citation

Takahashi, O., et al. (1995). Integrating orthodontics and oral myofunctional therapy for patients with oral myofunctional disorders. *International Journal of Orofacial Myology*, 21(1), 66-72.

DOI: <https://doi.org/10.52010/ijom.1995.21.1.10>

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

The views expressed in this article are those of the authors and do not necessarily reflect the policies or positions of the International Association of Orofacial Myology (IAOM). Identification of specific products, programs, or equipment does not constitute or imply endorsement by the authors or the IAOM. The journal in which this article appears is hosted on [Digital Commons](https://digitalcommons.elsevier.com/), an Elsevier platform.

Integrating Orthodontics and Oral Myofunctional Therapy for Patients With Oral Myofunctional Disorders

Osamu Takahashi, D.D.S., D.D.Sc.
Tadamasa Iwasawa, D.D.S., D.D.Sc.
Department of Orthodontics
Nihon University School of Dentistry at Matsudo

Miyako Takahashi, D.H., O.M.
Orofacial myofunctional therapist

Japan

INTRODUCTION

In Japan, some dental hygienists provide oral myofunctional therapy within the orthodontic office. Patients can be treated by the orthodontist and the therapist on the same day and at the same place. We have been treating patients as a team for seven years. We are convinced that oral myofunctional therapy and orthodontics are inseparable tools to treat orthodontic patients who have oral myofunctional disorders.

The orthodontist cannot achieve stable orthodontic results without normal muscle function. The therapist also motivates the patients to cooperate in wearing elastics and headgear. It is also an important benefit that normal muscle function helps create an attractive facial appearance and smile.

Occlusal improvement expedites the therapy, benefiting both patient and therapist. The orthodontist's verbal support of therapy strengthens the patient's interest in therapy. When the patient needs to wear an orthodontic appliance i.e., a transpalatal arch, a rapid palatal expander, etc. which obstructs the therapy, the therapist and the orthodontist can discuss the treatment sequence to achieve the best result.

Orofacial myology and orthodontics often overlap each other. For us, the most important benefit of the combined therapy is that we can discuss the various difficulties that each of us see with the patient. The following are some results of our combined therapy for orthodontic patients with oral myofunctional disorders.

CASE REPORTS

Case 1

A 7 year old female. The pre-treatment facial photographs show flaccid and chapped lips (Fig. 1a,b). The patient's and her mother's chief complaint was the underbite occlusion in the incisor area (Fig. 2a,b.). The occlusion seemed to be a simple Class I anterior cross bite and there was no arch length discrepancy. The tracing of the initial cephalometric headfilm indicated that the horizontal positions of the maxilla and mandible were in the normal range. FH plane to lower incisor angle of 48.5 degrees indicated mesial inclination of the lower anterior teeth. Because the main problem was limited to the dentition and not the skeletal pattern, the orthodontist could delay the orthodontic treatment until the eruption of all permanent teeth.

Although the orthodontist diagnosed that her malocclusion would be easy to correct, the myofunctional therapist noticed her relatively severe oral myofunctional disorder. She could not trace her lip line with her tongue. She was a mouth breather and her tongue was positioned low in the mouth and pressed against the lower anterior teeth. The tongue and the soft palate moved poorly. She swallowed without occluding her molars and her tongue protruded anteriorly and downward while swallowing. As she could not lift her tongue up into the palate, the condition of the lingual frenum could not be assessed at the initial observation. She also had speech problems and poor chewing patterns.

Oral myofunctional therapy^(1,2) was started. Twelve months later she could lift her whole tongue completely into the palate. She finished the regular program in 2 years and 8 months, but she still had some speech

Fig. 2a,b: Case 1. In spite of the functional problems of her orofacial muscle, the pretreatment occlusions seemed to be a simple Class I anterior crossbite.

Fig. 1a,b: Case 1. The pre-treatment facial photographs show flaccid and chapped lips.

Fig. 3a,b: Case 1. She finished the regular program 2 years and 8 months later. The anterior crossbite started to be corrected.

problems. The therapist added speech exercises. She finished the entire therapy program at 3 years and 8 months after the first lesson. She could swallow and speak correctly and habituation of the tongue and lip postural position was excellent. Following the improvement of the function, the occlusion changed gradually (Figs. 3a,b). The overjet was improved and the occlusion became stable. Her profile also changed (Fig. 4a,b).

A headfilm was taken and we evaluated for skeletal and dental changes following the improvement of the muscle function. The upper incisors had moved anteriorly. The lower incisors were slightly uprighted and a normal overbite and overjet were established. The maxilla and mandible had grown naturally downward and forward in coordination with each other. She was treated by only minor orthodontic tooth movement after the therapy.

This case indicates that improvement of oral muscle posture and function can make an excellent change in the dental form. Orthodontists sometimes

Fig. 4 - Case 1: The post-treatment facial photograph indicates the change in her profile.

hasten to place appliances, but sometimes it is important to have the patience to wait for the improvement of the function. Long-term treatment planning is an important aspect of the combined therapy. Close communication between the therapist and the orthodontist make such a treatment possible.

Case 2

A 10 year old male. He is a very typical case of our combined therapy. The pre-treatment facial photographs show the protrusion of upper and lower lips and retruded chin (Fig. 5a,b). His chief complaint was his extremely rotated upper central incisors (Fig. 6) and protruded lips. He had undergone surgery to remove two supernumerary teeth between the upper incisors two years before. The molar relation was Class I on both sides. There was no arch length discrepancy in the lower arch. The tracing of the pre-treatment headfilm indicated that the horizontal positions of maxilla and mandible were within the normal range, but his chin shape was very poor. The lower incisors inclined anteriorly. The large FMA (FH plane to Mandibular plane angle) indicated that he had a very steep mandibular plane. The orthodontist decided that to improve the patient's lateral profile, he must extract the 4 first bicuspsids.

The patient had orofacial myofunctional problems (Fig. 7). He was a mouth breather. Because his adenoids were large, we referred him to the ear, nose, throat specialist to help him achieve nasal breathing. He underwent an adenoidectomy. The therapist started the myofunctional therapy one month after his surgery. He commented to the therapist that he could breath through his nose easily,

Fig. 5a,b: Case 2. The pre-treatment facial photographs show the protrusion of upper and lower lips and the retruded chin.

Figure 6 - Related upper central incisors.

Figure 7 - Case 2: Pre-treatment intraoral photograph. The tongue was positioned low in the mouth.

but he continued his custom of breathing through his mouth. The regular program was finished and his tongue and lip postures were improved 1 year and 3 months later.

As the functional problem was resolved, the orthodontist could start the orthodontic treatment. The upper and lower bicusps were extracted and the edgewise appliances were placed. The J hook type headgear³⁾ was used to retract the canines (Fig. 8). This type of treatment needs good patient cooperation, but it is very effective to control the three dimensional structural change. He was an excellent patient. After the retraction of the canines, the upper and lower incisors were retracted to a good position. The oral myofunctional therapist checked his oral myofunctional condition every 3 months during the orthodontic treatment.

Two years and 2 months were required to finish the active orthodontic treatment and an excellent occlusion was established. He became a handsome young man (Fig. 9). The case was retained for 2 years. The occlusion

was very stable at 2 years after treatment. The post-treatment headfilm tracing indicated the uprighting of the anterior teeth by the orthodontic treatment. As the mandible grew downward and forward, the intraoral space for the tongue was maintained in spite of the retraction of the incisors.

The key to the success of this case is that we could correct his myofunctional disorders before, during and after the orthodontic treatment, and his tongue adapted well to the change in his dentition.

Case 3:

A 17 year old female (Fig. 10). Her chief complaint was the bilateral open bite (Fig. 11a,b). The lower arch was wider than the upper arch. The molar relation was Class III and only the second molars occluded. There were some arch length discrepancies in the upper and the lower arch.

The pre-treatment head film tracing indicated a tendency towards a skeletal Class III malocclusion. The inclinations of the upper and lower incisors were within the normal range.

She was a tongue thruster. Her tongue was positioned low in the mouth and protruded anteriorly and bilaterally while swallowing. Her tongue moved poorly. She swallowed without occluding her molars and her chewing pattern was poor.

The regular program of oral myofunctional therapy was started. She could lift her whole tongue into the hard palate 4 months later.

The orthodontist wanted to expand her upper jaw. At this point, her tongue condition was not perfect, but we decided to set a rapid palatal expander⁴⁾ into her upper arch. The therapist paused therapy so the patient could devote time to expanding her palate. The patient activated the jackscrew 0.4mm per day.

After 2 weeks, the midpalatal suture was separated and the basal bone of the upper arch was expanded (Fig. 12). A space occurred between the upper central incisors. The midpalatal suture was repaired gradually with new bone formation. The space between the central incisors closed automatically. During this period she continued "the open and close exercise" to maintain the function of her tongue. The palatal expander was removed and edgewise appliances were placed 10 months later. The regular program of oral myofunctional therapy was also started again.

The multiloop edgewise arch wires (MEAW) and vertical elastics were used to close the bite (Fig. 13). After the completion of the myofunctional therapy, the orthodontic appliances were removed. It took fifteen months to finish the case from the start of the edgewise appliance treatment. A good occlusion and a facial profile of excellent quality were established (Fig. 14, 15). Habituation of good postural positions of the tongue and lips were also obtained.

Fig. 8: Case 2. After the therapy, four bicuspids were extracted and edgewise appliances and J hook type headgear were started.

Fig. 9: Case 2. The post-treatment facial photographs indicate the improvement of his profile.

Figure 10 - Case 3: The pre-treatment facial photograph.

Fig. 11a,b - Case 3: Pre-treatment intraoral photographs show anterior and bilateral open bite.

Fig. 12 - Case 3: A rapid palatal expander was used to separate the midpalatal suture.

Fig. 13 - Case 3: The occlusion was corrected by MEAW and vertical elastics.

Fig. 14 - Case 3: After treatment, intraoral photographs.

Fig. 15: Case 3. The post-treatment facial photograph.

The post-treatment headfilm tracing indicated the tipping back of the lower molars. The upper and the lower incisors were slightly extruded. The occlusion was stable at 2 years after treatment.

There are some orthodontic appliances that obstruct oral myofunctional therapy, but close communication between the orthodontist and the therapist can indicate the proper sequence throughout the whole treatment.

CONCLUSION

The orthodontist and the oral myofunctional therapist should have good knowledge of each others procedures. An effective combined therapy of orthodontics and oral myofunctional therapy can obtain good treatment results; and good results make all of us happy. We plan to continue to treat patients as a team.

The authors wish to extend their sincere thanks to Mr. William E. Zickefoose and Mrs. Julie Zickefoose — our teachers and our best friends — for their help with this article.

Address correspondence to:
Osamu and Miyako Takahashi
5-28-4, Sakuragaoka, Setagaya-ku
Tokyo, 156, Japan

REFERENCES

- Zickefoose, W.E. (1989). *Techniques of Oral Myofunctional Therapy*. Sacramento, CA: O.M.T. Materials.
- Takahashi, M. (1991). *Kinkinouryuhouno jissai (Oral myofunctional therapy)*. Tokyo, Japan: Quintessence books.
- Merrifield, L. (1982). The systems of directional force. *Journal of the Charles H. Tweed International Foundation*, 10: 15-29.
- Haas, A.J. (1965). The treatment of maxillary deficiency by opening the midpalatal suture. *The Angle Orthodontist*, 35(3): 200-217.
- Takahashi, O. (1990). Histological Investigation on the effect of interrupted expansion force applied to the midpalatal suture in the rat. *Nihon Univ. J. Oral Sci.*, 16(2): 212-236.
- Kim, Y.H. (1987). Anterior openbite and its treatment with multiloop edgewise archwire. *The Angle Orthodontist*, 57(4): 290-321.