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Patients treated with orthodontic–myofunctional therapeutic protocol

ABSTRACT

Aim *The aim of this study is to report three cases that needed myofunctional and orthodontic treatment and the good results achieved after the therapy. Orthodontic treatment alone, in presence of bad habits, is not enough to solve the orthodontic issues, so it needs to be combined with myofunctional treatment.*

Keywords *Malocclusion, Myofunctional therapy, Oral habits.*

Introduction

Malocclusions can be defined as the presence of an anomalous relationships between the upper and lower teeth of either dental and/or alveolar origin. The types of occlusions can be classified as Class I (normal occlusion), Class II (distal occlusion) and Class III (mesial occlusion) with or without displacement and maxillary contraction. These alterations can be associated to bad habits (i.e. thumb sucking, oral breathing, atypical swallowing and labial interposition) which, if continuously repeated, can lead to functional anomalies of the orofacial musculature [Josell, 1995; Warren at al., 2005].

To solve these problems we can refer to functional and fixed orthodontic appliances, which can be supported, if necessary, by myofunctional therapy to recover the normal function of the oral muscles. The myofunctional therapist and specific exercises play a key role in the treatment [Mason, 2008].

For the success of the therapy this type of interdisciplinary approach is crucial to avoid any relapse which can occur after orthodontic treatment if bad habits have not been solved.

This report analyses three cases treated according to a protocol meant to solve these dysfunctions.

Materials and methods

Three patients with atypical swallowing were treated; the diagnostic and therapeutic protocol included the following.

- Collection of diagnostic records: extra-oral and intra-oral photographs, plaster model, cephalometric analysis on lateral cephalograms, assessment of the contraction of the labial orbicolar muscle, tongue position analysis.
- Correction of problems which, if not solved, could compromise the success of the therapy (i.e. maxillary contraction, oral breathing)
- Different therapeutic approach on the basis of skeletal and dental features:
  - the first case was treated only with myofunctional therapy to correct a Class II dental malocclusion and to correct the lateral open bite;
  - the second was treated with a removable orthodontic appliance and myofunctional therapy to correct the anterior open bite;
  - the third case was treated with rapid palatal expander to correct the maxillary contraction, and with removable orthodontic appliance and myofunctional therapy to correct the anterior open bite and the Class II malocclusion.
  - Re-evaluation after one year of treatment and collection of new diagnostic records: extra-oral and intra-oral photographs, plaster model, cephalometric analysis on lateral cephalogram, contraction of labial orbicolar muscle, tongue position analysis.

Case series

Case 1

GLM, boy aged 13 years, skeletal Class II, dental Class II on the right side, late mixed dentition, overjet 4 mm, overbite 3 mm. Patient with atypical swallowing with lateral tongue position (Fig. 1, 2, 3). The patient was treated with two cycles of ten sessions each of myofunctional therapy during which the orofacial musculature was functionally rehabilitated [Giunca et al., 2008]. At the end of the therapy the patient exhibited a dental Class I on the right side and the correction of atypical swallowing (Fig. 4, 5, 6). The labial orbicular muscle contraction increased from 500 g before treatment to 800 g after treatment.

FIGG. 1-6 Case 1.

Case 2

FA, boy aged 8 years, skeletal and dental Class I, mixed dentition, overjet 1 mm, overbite -6 mm. Patient with atypical swallowing, anterior tongue position and thumb sucking (Fig. 7, 8, 9). The patient was treated with a palatal crib appliance for 5 months and a Fränkel III appliance.

The patient was not compliant and did not wear the Fränkel appliance for the required hours; the overbite was 0 mm [Ngan and Fields, 1997; Huang et al., 1990]. Afterwards the patient was treated with two cycles of ten sessions each of myofunctional therapy, and the orofacial muscolature was functionally rehabilitated. At the end of the treatment the patient had 2 mm overjet and overbite (Figs. 10, 11, 12).

The labial orbicular muscle contraction increased from 800 g before treatment, to 1,200 g after treatment.

Case 3

PE, girl aged 9 years, skeletal and dental Class II, maxillary contraction, mixed dentition, overjet 5 mm, overbite -3 mm. Patient with atypical swallowing, anterior tongue position, thumb sucking and oral breathing (Fig.13, 14, 15).

The patient was treated with a palatal rapid expander for 6 months; the overbite was -2 mm.

Afterwards the patient was treated with three cycles of ten sessions each of myofunctional therapy and the orofacial muscolature was functionally rehabilitated; the overbite was 0 mm [Klocke at al., 2000] (Fig. 16, 17, 18). The labial orbicular muscle contraction increased from 550 g before treatment, to 800 g after treatment. The patient is still under treatment with removable orthodontic appliance to solve the II dental and skeletal Class.

FIGG. 7-12 Case 2.

FIGG. 13-18 Case 3.

Results

From the results of the three cases it can be inferred that with the combined orthodontic and myofunctional treatment it is possible to obtain better treatment outcomes.

The positive result of the first case was possible due to the patient's compliance and to the right timing of the therapy; it was possible to obtain the correct right canine occlusion only with the myofunctional therapy.

In the second case the myofunctional therapy was perfomed after orthodontic treatment with palatal crib and Fränkel III appliances, after a slight reduction of the anterior open bite to create an anterior block. The myofunctional therapy allowed to obtain a satisfactory overbite and overjet.

In the third case it was necessary to expand first the palatal arch and then obtain a good bite closure with the myofunctional therapy.

Discussion

Orthodontic treatment, in presence of bad habits (i.e. thumb sucking, oral breathing, atypical swallowing, labial interposition) and dysfunction of the orofacial muscolature, is not enough to solve the orthodontic issues. Therefore, it is necessary to combine it with the myofunctional therapy.

The success of the treatment can be granted only if the following are obtained.

- Patients' compliance.
- Removal of all negative factors able to affect the success of the treatment (i.e. maxillary contraction, short lingual fraenum).
- Cooperation between orthodontists and myofunctional therapist.

Conclusion

Myofunctional therapy is a valid support to the orthodontic treatment in cases with bad habits, and if correctly applied can lead to good therapeutic results.

Crucial to the success of the treatement are the following:

- Patient's and patient's family compliance in carrying out the home therapy.
- Cooperation among the medical staff whenever interdisciplinary treatment is required.
- Resolution of related pathologies (i.e. maxillary contraction, short tongue fraenum, oral breathing caused by adenoids and/or tonsillar hypertrophy)

Moreover, we can say that to obtain an efficient therapeutic result correct diagnosis and treatment timing are important factors.

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