

Correlation between Oral Respiration and Dental Abnormalities

SUMMARY

Oral respiration is considered as an important etiological factor of anomalies in the orofacial region. Many studies have shown a correlation between the manner of respiration and antero-posterior relation of the jaws. Aim of this study was to find out the frequency of patients with oral respiration and to determine the reason for oral respiration, as well as to examine different anomalies caused by oral respiration and to determine the success of treatment of the dento-facial anomalies.

From 230 patients with different dental and skeletal anomalies, 16% had oral respiration. The patients were selected based on the kind of nasal pathologies (structural, mucosal and mixed), and the kind of malocclusion. Intra-oral radiological examinations were performed. Orthodontic treatment was planned regarding the kind of anomaly.

Authors concluded that the precise discovery of the reason of nasal obstruction prior to orthodontic treatment significantly contributes to the success of treatment.

Keywords: Oral Respiration; Anomalies; Treatment, orthodontic

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Introduction

Human organs and systems are subjected to many morphological changes during life, which are closely dependent with their function^{1,3}. During childhood stage, the chewing system also shows correlation between form and function. Normally, the damage of this unity, due to different causes, creates pathological changes in this apparatus. Such changes can create different abnormalities of teeth and jaws. For this reason the study of the consequences of abnormalities is very important, as their recognition will help in planning prevention measures more exactly the.

Orofacial abnormalities are caused by different factors¹¹. In accordance with contemporary concepts, oral respiration is considered as an important factor in etiology of different anomalies. Many authors consider the existence of correlation between abnormalities of jaws and teeth and the way of respiration^{2,5,7,8,10}. Oral respiration is very important for the occurrence of different anomalies^{1,5}, especially for anterior-posterior relations of the jaws. It was also shown that correlation

between the manner of respiration and the development of face in vertical plane^{3,5,8}.

The enlargement of palatine tonsils in the nasal-pharyngeal system create sensibility of neighbouring structures, changing of conversation and, also, anatomic changes of the teeth and jaws^{1,4,6,9,11}. The difficulty in physiological way of respiration causes oral respiration. The child sleeps with open mouth; as a consequence, the faces and neck musculature change, which send up at the change of the upper teeth size. In this case, the lower jaw and tongue are together in the lower position, and as a result of continuing changes, the tonic equilibrium of the interior-anterior muscles of the mouth creates morphological changes of tooth positions and skeletal morphology of the jaws, with typical pattern²⁻⁴.

In order to arrive to successful results of the orthodontic treatment of different anomalies, determination of the cause of the existing anomaly is needed¹¹. As pathology in oral respiration is widely accompanied with different dental-facial anomalies, the aims of this study were: (1) to establish correlation between pathological manner of oral respiration and the present the dental anomalies in investigated patients; (2)

to determine reasons that had created the pathological way of respiration; (3) to apply the combined methods ENT-orthodontic treatment in order to achieve successful treatment.

Material and Methods

Continually for 2 years, among patients presented at the stomatological division of the Faculty of Medicine, as well as at the private clinic, we selected 230 patients with dental and skeletal anomalies, 6-20 years old. We determined that oral respiration was the reason of these anomalies. Out of these 230 patients that were examined, 37 patients (16.08%) had different barriers during respiration, and were referred for a specialized observation to the ENT department, in order to treat the cause of oral respiration. The nasal barriers for these patients were characterized as: (a) structural barrier; (b) mucosal barrier; and (c) mixed barrier. Patients were selected in accordance with nasal pathology and anomaly item.

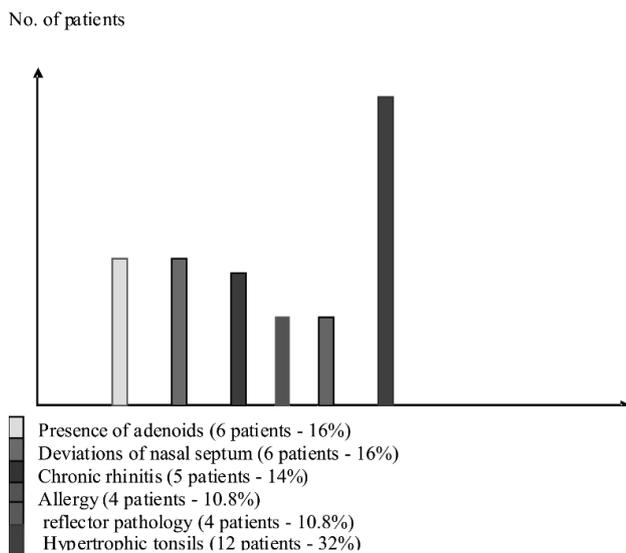


Figure 1. Nasal Pathologies

All patients were examined and respective ENT treatment, as well as orthodontic treatment, was performed.

Results

Due to ENT examination, reasons for oral respiration in 37 patients were adenoids, deviations of nasal septum, allergic chronic rhinitis, etc (Fig. 1).

Orthodontic examination revealed that 13 patients (35%) had long face and labial incompetence, and 17 patients (45.9%) had open bite (Fig. 2). 7 patients (18.9%) shown very deep palate, with protruding upper teeth (Fig. 3).

We establish absolute correlation (100%) between adenoid vegetation and other nasal-oral pathologies with anomalies of the jaws-teeth system in accordance with below formula: nasal-oral pathology ® oral respiration ® dental-maxillary anomaly.



Figure 2. Patient with open bite



Figure 3. Patient with deep palate and protruding maxillary frontal teeth

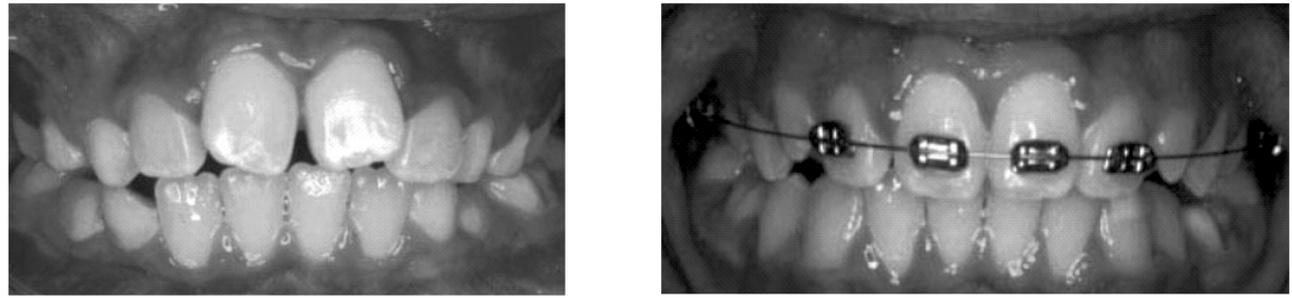


Figure 4. The result of orthodontic treatment of 1 patient

The positive results of the orthodontic treatment based at the fixed and removable appliances (Fig. 4) were noticed in 24 patients (64.8%) with adenoid vegetations (Fig. 5), nasal septum deviations and hypertrophy of tonsils. In patients with chronic rhinitis and allergy, the orthodontic treatment was performed only after ENT treatment and the positive results were received in 24.32% of all cases after 3 years. For 10.81% of all cases positive results were not received by general specialists.



Figure 5. Cephalometric image of a patient with the presence of obstacle in breathing

Discussion

Correlation between oral respiration and anomalies of dento-maxillary segment is frequently discussed in

orthodontic literature. An absolute correlation has been observed between adenoid vegetations, the breathing items and jaw-tooth anomalies, which is in accordance with our results and results other authors^{2,11}. It has been noticed that hypertrophic tonsils at 2-year-old children grow very quickly, being larger in 55% of the cases at 6-year-olds and in 71% of the cases in 13-year-olds¹¹.

Dental specialists may observe different oral-facial symptoms that are caused by changes in the respiration pattern, such as wide face with deformation of the superior arcades, posterior rotation of the lower jaw, hypertonic or hypotonic upper lip, as well as the open bite. Intraorally, contracted of teeth arcs, narrow and deep palate, as well as a view like "astonished" face may be noticed. After determining diagnoses like these, dentist should refer children to ENT specialists.

In cases with typical wide face with deformation of superior arcade and posterior rotation of the lower jaw, transversal extension of the palate movable appliance with posterior surface should be applied at the beginning. To achieve favourable alignment of frontal teeth, we used the fixed appliance (Fig. 4). Patients with deep palate were treated depending on the phase of tooth eruption - treatment was postponed till tooth eruption and than so-called REM appliance was fixed. After adjusting the occlusion the fixed appliance was used at the final phase.

Conclusions

Based on the results of our study, a full correlation between oral respiration and dento-maxillary anomalies exists, and is more frequently the cause of different anomalies. Before the beginning of orthodontic treatment, a precise manner of nasal respiration barrier should be discovered, and a close relationship with ENT specialists should be established. By interceptive countermeasures, we could possibly interrupt the aggravation of the facial-oral problems.

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