

Muscle balance as a factor in spontaneous correction of frontal teeth in a patient with cerebral palsy

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Case Report

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Mišićni ekvilibrij kao faktor spontane korekcije frontalnih zuba kod pacijenta sa cerebralnom paralizom

ABSTRACT

The aim of the case report is a patient with cerebral palsy in whom, spontaneous correction of the position of the maxillary central incisors occurred following the removal of supernumerary teeth, as a result of the continuous action of the lip muscles in accordance with equilibrium theory.

Key words: equilibrium theory, lip muscles, tooth position, mesiodens, cerebral palsy, spontaneous correction.

Introduction

The position of teeth within the dental arch is the result of a dynamic balance between genetic factors, growth and development of the craniofacial complex, and the functional forces acting on the teeth. One of the key concepts explaining this balance is the equilibrium theory, according to which a stable tooth position is determined by the relationship between the forces of the tongue on the oral side and those of the lips and cheeks on the vestibular side. Although the forces of the perioral musculature are of low intensity, their continuous and long-term action plays a decisive role in the long-term stability of tooth position, particularly in the anterior region.

The lip muscles, especially the m. orbicularis oris, play an important role in determining the position of the incisors. This influence is particularly pronounced in patients with neurological disorders, such as cerebral palsy, in whom an imbalance of the orofacial musculature is frequently present.

The aim of this paper is to present a patient with cerebral palsy in whom, following the extraction of supernumerary teeth and without orthodontic therapy, spontaneous correction of the position of the upper central incisors occurred, which may be associated with the continuous action of the lip muscles.

Case Report

Patient A. J., a 16-year-old female (born in 2007) diagnosed with cerebral palsy, received dental treatment for the first time in June 2023 under general anesthesia, exclusively for the management of carious teeth, as this was the only possible way to perform the dental procedure due to the underlying condition and inability to cooperate.

During the procedure, clinical examination revealed protrusion of the upper central incisors as well as two palatally positioned mesiodentes (Figure 1), which were removed during the intervention.

Radiological diagnostics were not performed due to the patient's general medical condition.

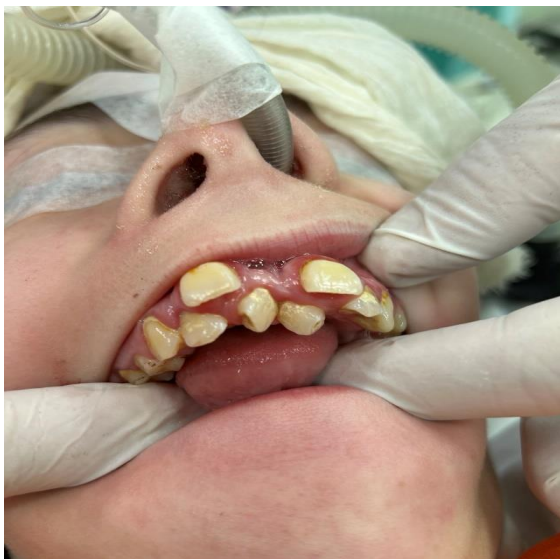


Figure 1. Clinical examination in 2023 – Pronounced protrusion of the upper central incisors caused by palatally positioned mesiodentes

In the interim period, the patient was not followed up. The next appointment took place two years later, at the age of 18, in December 2025, due to the treatment of newly developed carious lesions.

During this procedure, performed under general anesthesia, a significant improvement in the position of the upper central incisors was observed, with the formation of an optimal dental arch (Figures 2, 3, and 4).

Given that no dental or orthodontic interventions were performed in the meantime, the observed changes can be attributed to spontaneous correction that occurred after the removal of etiological factors, namely the supernumerary teeth, along with the continuous action of the forces of the upper lip.

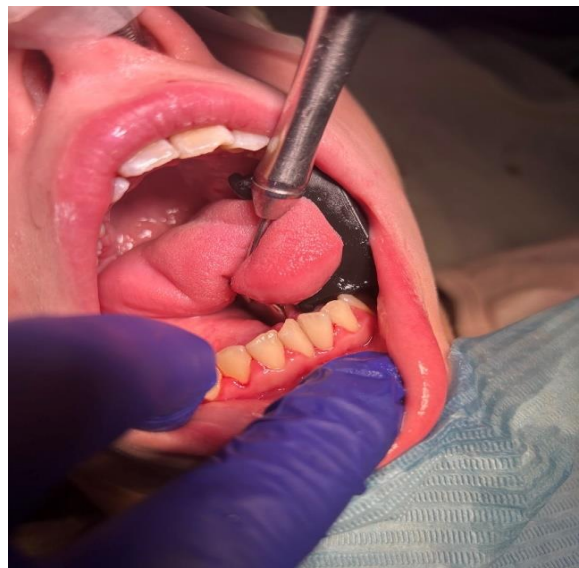


Figure 2. Clinical examination in 2025 – Spontaneous correction of the position of the upper anterior teeth was observed



Figure 3. Spontaneously retruded anterior teeth

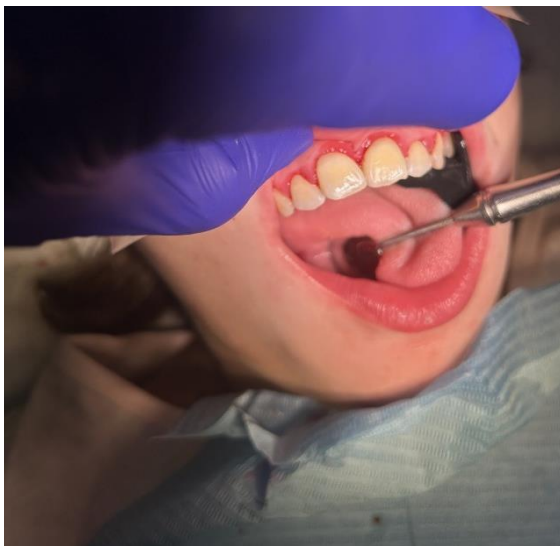


Figure 4. Optimal dental arch achieved without orthodontic treatment.

Discussion

The presented case confirms the clinical relevance of the equilibrium theory and the role of the perioral muscles in determining tooth position. Following the removal of the mechanical obstacle, the establishment of a new functional balance between the forces of the

tongue and the lips was enabled, resulting in spontaneous correction of the position of the upper central incisors.

The obtained findings are consistent with the available literature, which indicates that the continuous action of mild but long-term muscular forces can produce clinically significant orthodontic effects. It is particularly noteworthy that the correction was achieved without active orthodontic therapy, emphasizing the importance of eliminating etiological factors before planning complex therapeutic procedures.

Similar cases of spontaneous correction following the removal of a local etiological factor have been described in the literature, confirming the consistency of the present findings with existing clinical evidence.

The specificity of this case lies in the fact that it involves a patient with cerebral palsy, in whom therapeutic options are limited and dental procedures are complicated due to the need for general anesthesia. Despite these limitations, a stable tooth movement was observed, further confirming the importance of functional factors in regulating tooth position within the dental arch.

A limitation of this case report is the absence of radiological diagnostics, which reduces the possibility of an objective assessment of the initial and final tooth positions. Nevertheless, the clinical findings and photographic documentation clearly indicate the observed changes.

Conclusion

- The lip muscles have a significant influence on the position of the anterior teeth.
- Removal of etiological factors may enable spontaneous and stable tooth movement without active orthodontic therapy.
- Continuous forces of the perioral muscles play a key role in the long-term stability of tooth position.
- The equilibrium theory has particular clinical value in the treatment of patients with limited therapeutic options, including those with neurological disorders.

Statement on Photographs

All photographs included in this paper represent the author's original documentation and have not been previously published.

References

1. Proffit WR, Fields HW, Sarver DM Contemporary Orthodontics 6th ed. St Louis: Elsevier; 2019.
2. Weinstein S. Equilibrium theory revisited : factors influencing position of the teeth. Angle Orthodontist
3. Thuer U, Ingervall B. Pressure from the lips on the teeth and malocclusion. American Journal of Orthodontics and Dentofacial Orthopedics
4. Tomonari H et al. influence of lip pressure on maxillary incisor position. European Journal of orthodontics. 2021.
5. Yamaguchi K, Nanda R. Role of perioral musculature in dentofacial development. Progres in orthodontics .2020.
6. Graber LW, Vanarsdall RL, Vig KWL. Orthodontics: Current Principles and Techniques. St. Louis: Elsevier