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Management of Lower Lip-Sucking Habit and Lip Trap Using a Shield Lip Bumper Appliance: A Case Report

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Abstract

Lower lip-sucking habits can lead to significant dentofacial alterations, including increased overbite, lip incompetence, mentalis strain, and altered incisor inclination. Early interception of such habits is essential to prevent progression of malocclusion and promote normal dentofacial development. This case report describes the management of an 11-year-old male patient presenting with a lower lip-sucking habit, lip trap, increased overbite, enamel hypoplasia, and gingival inflammation. A shield lip bumper appliance was employed for six months with monthly follow-up appointments. Successful elimination of the habit, correction of lip trap, reduction of overbite, improvement in lip competence, and favorable mandibular growth changes were observed. The case highlights the effectiveness of shield lip bumper therapy as an interceptive orthodontic approach for habit correction and dentoalveolar improvement.

Keywords: Lip bumper, lip-sucking habit, lip trap, overbite, interceptive orthodontics, habit-breaking appliance.

Introduction

The equilibrium between the tongue, lips, cheeks, and dentition plays a critical role in maintaining normal occlusion. Disruption of this balance through parafunctional habits such as lower lip sucking may result in dentofacial alterations, including excessive

overjet, deep bite, proclination of maxillary incisors, retroclination of mandibular incisors, lip incompetence, and mentalis muscle hyperactivity.

Lip bumper therapy has been widely utilized as an interceptive orthodontic appliance for eliminating lower lip-sucking habits while simultaneously improving mandibular arch dimensions and dental relationships. By shielding the dentition from abnormal lip pressure, the appliance promotes favorable dentoalveolar adaptation and assists in correcting associated malocclusions.

This report presents the successful treatment of a growing patient with lower lip-sucking habit and lip trap using a shield lip bumper appliance.

Case Presentation

An 11-year-old male patient reported to the Department of Pediatric Dentistry with a chief complaint of persistent trapping of the lower lip behind the maxillary incisors during closure.

The patient's medical history was non-contributory. Clinical examination revealed the presence of enamel hypoplasia and generalized gingival inflammation. The patient exhibited a habitual lower lip-sucking behavior associated with lip incompetence and a pronounced lip trap.

Extraoral Examination

Extraoral assessment demonstrated:

- Convex facial profile
- Incompetent lips at rest
- Presence of lip trap
- Lower lip-sucking habit
- Increased lower facial strain during lip closure

Intraoral Examination

Intraoral findings included:

- Significant deep overbite
- Lower lip-sucking habit
- Enamel hypoplasia affecting multiple teeth
- Generalized gingival inflammation
- Developing malocclusion associated with abnormal lip posture

Based on the clinical findings, a diagnosis of lower lip-sucking habit associated with lip trap and increased overbite was established.

Radiographic examination

Lateral Cephalogram was done and it indicated the following findings:

SNA – 77º

SNB – 75º

ANB – 4º

Occlusion to SN plane – 25º

Go-Gn to SN – 34º

NA to perpendicular drawn through upper incisor – 29º

- 4mm

NB to perpendicular drawn through lower incisor - 20º

- 3mm

Interincisal angle- 127º

Treatment Objectives

The treatment objectives were:

1. Elimination of the lower lip-sucking habit.
2. Correction of lip incompetence and lip trap.
3. Reduction of excessive overbite.
4. Improvement of soft tissue balance.
5. Promotion of favorable dentofacial growth and development.
6. Prevention of future malocclusion progression.

Treatment Plan

A shield lip bumper appliance was selected as the interceptive treatment modality.

The appliance was designed to:

- Prevent placement of the lower lip behind the maxillary incisors.
- Eliminate abnormal muscular forces exerted on the dentition.
- Encourage normal lip posture and function.
- Facilitate dentoalveolar adaptation and correction of overbite.

The appliance was planned for a treatment duration of six months with periodic monitoring every four weeks.

Treatment Progress

The shield lip bumper appliance was fabricated and delivered to the patient. Oral hygiene instructions were provided due to the presence of gingival inflammation.

The patient was reviewed at four-week intervals for appliance assessment and reinforcement of habit cessation counseling. Compliance was satisfactory throughout treatment.

Progressive improvement in lip posture and reduction in lip-trapping behavior were noted during successive follow-up visits.

After six months of therapy, complete cessation of the lower lip-sucking habit was achieved.

Treatment Results

At the completion of treatment, the following improvements were observed:

- Complete elimination of lower lip-sucking habit.
- Resolution of lip trap.
- Improved lip competence at rest.
- Significant reduction of deep overbite.
- Improvement in soft tissue balance.
- Favorable forward mandibular growth during the observation period.
- Enhanced facial esthetics and functional lip posture.

No adverse effects associated with appliance therapy were observed.

Radiographic Findings

The lateral Cephalogram done post treatment indicates the following:

SNA - 77º

SNB - 74º

ANB - 3º

Occlusion to SN plane - 18º

GoGn to SN - 35º

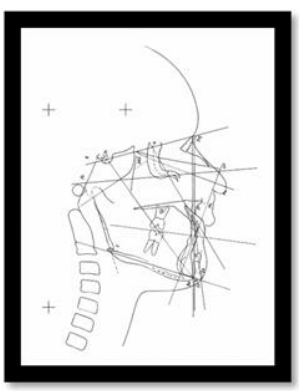
NA to perpendicular through upper incisor - 25º

- 5mm

NB to perpendicular through lower incisor- 28º

- 3mm

Interincisal angle - 124º



Discussion

Parafunctional oral habits can significantly influence craniofacial growth and occlusal development. Lower lip sucking is associated with abnormal pressure distribution on the dentition, often resulting in deep bite, altered incisor inclination, lip incompetence, and soft tissue imbalance.

The shield lip bumper functions by eliminating the abnormal influence of the lower lip on the dentition while allowing the tongue to exert its natural expansive effect on the mandibular arch. Previous investigations have demonstrated that lip bumper therapy increases arch length and perimeter, promotes incisor proclination, and contributes to favorable dentoalveolar changes.

The findings of the present case are consistent with previous reports demonstrating successful elimination of lip-sucking habits using lip bumper therapy. Similar improvements in lip competence, reduction of mentalis strain, and correction of overbite have been reported in the literature.

The observed reduction in overbite and improvement in lip posture may be attributed to the interruption of abnormal muscular activity and restoration of a more favorable oral muscular equilibrium. Additionally, the patient's growth potential likely contributed to the favorable mandibular development observed during treatment.

Early interceptive treatment is particularly advantageous because it prevents the establishment of more severe skeletal and dental discrepancies that may require comprehensive orthodontic intervention in the future.

Conclusion

The shield lip bumper appliance proved to be an effective interceptive orthodontic treatment for managing a lower lip-sucking habit and associated lip trap in a growing patient. Habit elimination was achieved within six

months, accompanied by improvement in overbite, lip competence, and facial balance. Early intervention with lip bumper therapy can successfully modify unfavorable oral habits and contribute to improved dentofacial development.

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A comprehensive review of available literature supports the use of lip bumper appliances for interceptive management of oral habits and mild dentoalveolar discrepancies. Evidence suggests favorable effects on arch dimensions, incisor position, overbite correction, and muscular balance. Habit interception during the growth period can significantly improve treatment outcomes and reduce future orthodontic complexity.