

MEDICAL SCIENCES

ACCELERATED ORTHODONTIC TREATMENT WITH SYNCSPLINT AND CLEAR ALIGNERS: A CLINICAL CASE REPORT

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Abstract

Clear aligner therapy offers aesthetic and functional benefits, but synchronizing tooth movements between arches often prolongs treatment. This case report presents the use of SyncSplint, a dual-arch auxiliary appliance, in combination with Dentalign® aligners for accelerated treatment. The patient, treated under the clinical supervision of Assoc. Prof. Miroslava Dinkova, showed improved treatment efficiency and comfort. The combination of clear aligners and SyncSplint reduced reliance on attachments and elastics, providing better synchronization and enhanced predictability.

Keywords: clear aligners, SyncSplint, accelerated orthodontics, biomechanics, case report

Introduction

Clear aligner therapy (CAT) is increasingly used as an alternative to fixed appliances. Despite advances in digital orthodontics, synchronizing tooth movement between maxillary and mandibular arches remains a challenge. Attachments, buttons, and elastics are often required, leading to extended treatment.

SyncSplint was developed as a digitally designed and 3D-printed dual-arch appliance. When combined with aligners, it provides occlusal stabilization, anchorage, and synchrony of tooth movements.

Materials and Methods

The patient was planned for aligner therapy (Dentalign®). Intraoral scans were taken, and both aligners and SyncSplint were digitally designed. SyncSplint was worn over the aligners continuously, including during sleep. Clinical supervision and treatment were carried out by Assoc. Prof. Miroslava Dinkova.

Results

- Improved synchronization between arches
- Reduced treatment time compared to standard aligner protocols
- Fewer attachments and auxiliaries required
- High patient comfort and compliance

Discussion

This case illustrates the potential of SyncSplint to enhance biomechanics in clear aligner therapy. By stabilizing occlusion and synchronizing tooth movement, treatment becomes more predictable and efficient. Limitations include the need for patient compliance and adaptation to dual appliances.

Conclusion

The integration of SyncSplint with clear aligners demonstrates a promising approach for accelerated and predictable orthodontic treatment. Further studies are recommended to validate these findings in larger cohorts.



Figures

Fig. 1. SyncSplint appliance in intraoral position worn simultaneously with Dentalign® clear aligners.



Fig. 2. Initial intraoral photographs of the mandibular arch showing crowding before treatment.



Fig. 3. Final intraoral photographs of the mandibular arch after treatment with clear aligners and SyncSplint.



Fig. 4. Initial intraoral photographs of the maxillary arch before treatment.



Fig. 5. Final intraoral photographs of the maxillary arch after treatment.

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