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Occlusal Splint with Z–Spring: A New Appliance to Correct Anterior Cross Bite

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Case Report

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Abstract: A newer treatment modality for correction of anterior cross bite with use of acrylic occlusal splint with Z spring has been used, which is easy to fabricate, easy to use and require least patient cooperation. This article describes two cases treated with this appliance in mixed dentition and duration of the treatment noted in these patients.

Keywords: Cross bite, spring, Splint.

INTRODUCTION

Cross-bite is a one of the most common type of malocclusion that is frequently encountered in the general practice. Moyer has defined simple anterior tooth cross bite as a dental malocclusion resulting from the abnormal axial inclination of one or more maxillary teeth [1]. It can be observed unilaterally or bilaterally.

Appliance fabrication

Alginate impressions of both arches were obtained, and a Z spring with 0.012 AJ Wilcock stainless steel wire was fabricated on the teeth which are in cross bite. Spring was stabilised on the cast with molten wax. Separating media applied and occlusal splint was fabricated with clear self cure acrylic material. The wax was removed from the spring after the appliance fabrication. The appliance was trimmed so that the marginal gingiva is free, cleaned and polished (Fig 1).

At the day of appointment, the appliance was checked for fit and the high points were removed with the use of articulating paper so that the appliance contact uniformly with the lower posterior teeth. After checking, the Z spring in the appliance is activated to the required extent. The appliance is cemented with Glass Inomer Cement (GIC). Patients are instructed to use fluoride toothpaste and mouthwash.

CASE PRESENTATION

This article reports two cases of simple anterior cross bite in children with mixed dentition stage reported to Department to Orthodontics, treated with occlusal splint with Z spring appliance.

Case 1, age 8 years girl with anterior cross bite, involving upper left central and lateral incisors (Fig 2 A,B,C). Case 2, age 8 years boy with anterior cross bite with respect to upper right and left central incisors (Fig 3A,B,C).

The cases reported above are in mixed dentition stage and have flush terminal plane relationship. Patients were recalled every week and cross bite corrections were achieved in two weeks but the appliance was left in place for some more time. Appliance is removed and the residual GIC on the teeth is cleaned along with through prophylaxis. Recementation was not required in any of the cases.

Fig-1: Occlusal splint with incorporated Z spring for single tooth cross bite

Fig-2: (A) Cross bite involving upper left central and lateral incisors. (B) Appliance activated and cemented. (C) Cross bite corrected

Fig-3: (A) Cross bite involving upper central incisors. (B) Appliance activated and cemented. (C) Cross bite correction done

DISCUSSION

Anterior cross bite is a condition which seldom corrects by itself as the maxillary incisor is locked behind the mandibular incisors, which over the time may worsen the malocclusion leading to muscular and occlusal imbalance. The ideal age for correction of anterior dental cross bite is between 8-11 years, during which the root is being formed and the tooth is in active stage of eruption.

Anterior cross bite is a common orthodontic problem that may be corrected with removable or fixed appliance or a combination of both. Till date there have been various treatment modalities which are available for correction of simple cross bite like grinding of the deciduous teeth, tongue blade therapy, use of lower inclined plane, stainless steel or composite crowns angled at 45 degrees, Hawley's retainer with auxiliary springs, removable inclined plane (Bruckl appliance), use of labial or lingual arch wires etc.

When occlusal splint with z spring appliance is compared with inclined plane (Catalan's appliance), the Catalan's appliance is uncomfortable to wear as the patient finds it difficult to chew and its limited use in patients with crowding. In comparison to grinding of deciduous teeth to correct the cross bite; this appliance is a non-invasive, not requiring removal of the tooth material for malocclusion correction. When Hawley's retainer is used in patient, the result completely depends on compliance of the patient.

The case selection for using this appliance determines the success of the treatment which depends on the factors given by Lee in 1978, which include adequate space in the arch to reposition the tooth, sufficient overbite to hold the tooth following correction, and a Class I molar relation [2]. The occlusal splint with Z spring appliance developed to correct simple cross bite, which can be corrected by simply tipping the teeth labially.

CONCLUSION

The above mentioned cases well describes the Occlusal splint with Z spring appliance being an acceptable alternative to correction of anterior cross bite instead of complex fixed or removable orthodontic therapy. In all the cases reported, the correction of anterior cross bite was obtained within a period of two weeks with no damage to the teeth or marginal

periodontal tissue. So, it can be stated to be a simple, effective and economical alternative that a patient can wear it easily even in day to day activity. Thus, this is a simple appliance to fabricate and use in paediatric patients, it offers least difficulty in chewing over bite plane and appliance can be designed to correct single or multiple teeth.

REFERENCES

1. Moyers, R. E. (1973). *Handbook of orthodontics*. 3rd edition. Chicago (IL): Yearbook publishers Inc.
2. Lee, B. D. (1978). Correction of cross bite. *Dent Clin North Am*, *22*(4), 647-668.