

A Novel Blue Grass Appliance for Twin Girls: A Case Report

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Abstract

Digit sucking is a common childhood behavior. Prolonged digit sucking beyond the preschool age, lead to the development of malocclusion such as anterior open bite, maxillary constriction and posterior crossbite. If we review the literature different treatment options like appliance therapy, counselling have been documented. This case report presents a case of twin girls aged 7 years old who had many carious teeth, thumb sucking habit and tongue tie. A customized hybrid novel bluegrass appliance was fabricated and planned to be given as a space maintainer to manage thumb sucking habit.

Keywords: Novel bluegrass appliance, space maintainer, thumb sucking

INTRODUCTION

During the course of normal development oral habit is very commonly seen in children³. It is an involuntary fixed practice produced by a constant repetition of an act^{1,4}. Thumb sucking or non-nutritive sucking in a common childhood behavior of infantile period which are initiated and terminated spontaneously^{1,2}. It first manifests when they are in womb around 29 weeks of age³. It is considered normal upto the age of 3-4 years². Children tend to place their finger, thumb or pacifier or the objects in their mouth as a sense of security. Prevalence of sucking habit is 1.7% to 47%^{1,5}. If the habit continues into the mixed dentition malocclusion develops¹ due to alteration of the functional equilibrium between tongue and the orofacial musculature⁶. The severity of thumb sucking is influenced on how long and intense the habit is⁴. It may result in increased overjet, labial inclination of lower incisors, openbite, proclination of upper anteriors, posterior cross bite, compensatory tongue thrust, deep palate and occasionally speech defects^{2,3}. The treatment of malocclusion due to thumb sucking depends upon the willingness of the child to stop the habit⁶. Correction of the habit involves counselling of child, encouragement to improve self-confidence by positive reinforcement or

appliance therapy³. “Reminder Therapy” technique is used to cease the digit sucking habit⁵.

Haskel and Mike in 1991 introduced the blue grass appliance which is also known as habit correction roller, it is effective than cribs which are traditionally used^{1,5}. It is easy to wear, nondestructive and user friendly³. This paper presents a case report of twin girls aged 7 years where a customized hybrid novel bluegrass appliance was fabricated for intercepting the thumb sucking habit simultaneously functioning as a space maintainer.

CASE REPORT :

7 year old twin girls reported to the department of Pedodontics and Preventive Dentistry with the chief complaint of decayed teeth in all posterior teeth. Both the girls did not have any history of pain. On taking a detailed case history both the girls had history of thumb sucking habit since the age of 2 years which still existed. They had the habit only during night while sleeping. On examination there were presence of multiple caries teeth, open bite, flaring of incisors and severe ankyloglossia (class III Kotlow's classification)⁷. The twins even had a slurred speech due to tongue tie. A multidisciplinary approach was planned to correct the thumb sucking habit, manage tongue tie and treat all the caries lesions.



Firstly all the teeth which needed restorative and pulp therapy were treated. Both the girls needed extraction of teeth which had to be followed by a space maintainer, in the lower quadrant after extraction band and loop were placed. However in the upper quadrant nance appliance was planned. To correct the thumb sucking habit blue grass appliance was also needed. A novel appliance was fabricated where a bead was added to the nance appliance making into a modified version of blue grass appliance. The appliance was fabricated and cemented into the girls mouth. The twins were reviewed every 2 weeks. Tongue tie was also corrected using diode laser (iLase, Biolase, 2.5 W, 940nm). The patient was directed to roll the bead with her tongue. It helped in movement of the tongue freely after its surgery. The thumb sucking habit discontinued within 8 weeks. However the appliance was kept till 6 months and then removed.



PRE AND POST OP PHOTO OF 1ST TWIN



PRE AND POST OP PHOTO OF 2ND TWIN



MANAGEMENT OF TONGUE TIE USING LASER

DISCUSSION:

Placing a digit into the mouth and rhythmically repeated sucking is called thumb sucking which is often relaxing and beneficial for the person⁴. However after age 6 it can begin to damage and should be intervened. It is usually handled in a multidisciplinary approach². It's always a challenge to decide on the type of dental appliance after reminder or reward therapy. Only if the child fails to overcome the habit an intraoral appliance is planned¹.

Based on the principle of positive reinforcement an oral appliance was invented by Haskel and Mink¹. It is a hexagonal Teflon roller on a cross palatal wire². The child is instructed to play with the bead with its tongue³. The device works on principle of counter conditioning response to the original stimulus of thumb sucking¹. The roller doesn't contact with the palatal tissue and within a few days the tongue establishes new non harmful habit of playing with roller³.

In the present study the child had multiple caries teeth and thumb sucking habit. The carious teeth could not be saved and were extracted after which a space maintainer was planned. As stated by McDonald and Avery², the space closure occurs within 6 months after the loss of tooth, nance appliance was planned. Both a space maintainer and a habit breaking appliance was needed. A customized hybrid novel bluegrass appliance was fabricated which could stop thumb sucking and act as a space maintainer. This appliance was made by first placing the bands in the maxillary permanent first molar and impression was taken. On the cast first a nance appliance was made using 0.045 stainless steel wire to which a horizontal wire with the Teflon bead was soldered behind the 'U' shaped bend. This appliance was planned for both the twins. The advantage of this appliance is that once the objective of bluegrass appliance was completed we could separate the glass bead keeping the functional space maintainer in the mouth until required.

In a retrospective study bluegrass appliance was used on 30 patients out of whom 28 patients had stopped the thumb sucking habit after its insertion⁹. In a study by Haryatt et al reports the end of thumb sucking habit of 28 patients to be effective if used for 24 weeks¹⁰. Thus even in the

present study the appliance was kept for 6 months.

CONCLUSION:

The custom built hybrid novel bluegrass appliance is a multipurpose and it can be successfully used to correct thumb sucking and also act like a space maintainer. It is secure for the patient and completely breaks the habit within a limited period of time. It does not interfere with child's growth and eliminates the habit with limited complications.

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