

MANAGEMENT OF THUMB SUCKING HABIT WITH THE THREADED THUMB
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ABSTRACT

Aim: This case report aims to describe the management of thumb sucking habit. **Case Description:** A 14-year-old boy visited the department of Pediatric and Preventive Dentistry, People's Dental Academy, Bhopal with the chief complaint of open bite and habit of thumb sucking. Clinical and radiographic examination revealed, anterior open bite, maxillary proclination with increased overjet and overbite, high palatal vault, lip incompetence. Extra oral examination revealed dishpan shape appearing thumb and callous formation was also present. Habit breaking appliance, a Palatal crib along with a threaded thumb guard was the treatment plan advised. **Results:** At three month follow-up, cessation of the habit was observed using intra oral and extra oral habit breaking appliance. **Conclusion:** The results indicate that the palatal crib along with the threaded thumb guard was effective in managing thumb sucking habit.

KEYWORDS: Thumb sucking habit, palatal crib, threaded thumb guard, habit breaking.

INTRODUCTION

Oral habits are a normal part of a child's development, and they involve repetitive muscle movements that are learned over time. These habits typically fade as children grow older. One of the most common oral habits in infants is sucking, whether it's fingers, thumbs, pacifiers, or other objects. Sucking is not only a reflex but also serves as a form of self-soothing, helping babies feel secure.^[1]

This reflex begins around 29 weeks of gestation in the womb and is the first behavior that infants exhibit after birth. Infants and young children often engage in sucking as a way to explore their environment and find comfort. It's particularly common when children feel anxious, insecure, or are in unfamiliar situations, such as being around strangers or when separated from their parents.

Additionally, sucking can help calm a baby, inducing sleep and promoting relaxation.^[1]

Thumb sucking is the most common oral habit in children, with its prevalence ranging from 13% to 100% in different communities. While it is a normal behavior in early childhood, it can lead to serious dento-facial issues if it persists, such as an anterior open bite, poor aesthetics, speech problems, and even psychological effects. Therefore, it's crucial to assess and address this habit early for proper diagnosis and treatment planning.^[2]

Intervening during the mixed dentition phase (when both primary and permanent teeth are present) is ideal, as it helps prevent long-term damage to the teeth and facial structure. Early treatment also improves the chances of success, helps maintain stability, and may influence

vertical growth. Additionally, it can enhance chewing, speech, and overall appearance.^[3]

Several appliances can be used to break the thumb sucking habit, including palatal cribs, palatal spurs, and bluegrass appliances. These devices act as physical barriers to prevent thumb sucking and encourage bite closure. However, they come with their own set of challenges. They can make speaking and eating difficult, are often bulky, and can affect the appearance. Some appliances, like those with spurs, may even cause injury to the tongue or thumb, leading to negative reactions from both children and parents. These issues can impact patient compliance, suggesting the need for more effective, patient-friendly solutions to break the habit.^[4]

Among the intraoral appliances utilized for the management of oral habits, the quad helix and the palatal crib are the most frequently employed devices. The palatal crib demonstrates a notably high success rate, primarily due to its capacity to modify tongue posture, thereby facilitating the discontinuation of the thumb-sucking habit. Although children may initially encounter minor difficulties in mastication and temporary alterations in speech, these issues typically resolve as they adapt to the appliance within approximately one week.^[5]

Extraoral habit-breaking approaches have been found to be well accepted among school-aged children. Modern extraoral appliances, including the thumb guard, RURS elbow guard, and the “three-alarm system: revisited,” are specifically designed to be worn on the finger or elbow, serving as behavioral reminders to discourage thumb- or finger-sucking habits.^[5]

Thus, the purpose of this case report is to present management of thumb sucking habit using palatal crib

along with threaded thumb guard.

CASE DESCRIPTION

A 14-year old male child with his parents reported to the Department of Pediatric and Preventive Dentistry, People’s Dental Academy, Bhopal, with the chief complaint of an open bite. The patient’s parents gave history of thumb sucking habit. There was no relevant medical or dental history. There was a failed previous trial of using home remedies to stop the habit as he continued to practice thumb sucking during day and night.

On clinical examination, lip incompetence was observed along with an anterior open bite (Figure 1). Presence of maxillary proclination with increased overjet, increased overbite and high palatal vault was seen. A deep carious lesion in right mandibular first molar, w.r.t #46 was also observed (Figure 2).

Extraoral examination revealed clean dishpan shape appearing nail. Callous formation on the thumb was observed. Thumb was reddened, clear, chapped with short finger nail (Figure 3).

The patient’s mother gave history of thumb sucking 8-10 times a day for 2-3 minutes and continuously during sleep.

Diagnostic records were taken for the child including extra-oral, intra-oral photographs; digital panoramic, lateral cephalometric radiographs; and study models (Figure 4). Alginate impressions were taken for the maxillary and mandibular arches with fitted sized perforated trays. The impressions were immediately disinfected and poured with orthodontic stone material. It was then properly trimmed to obtain orthodontic study casts.



Figure 1: Pre – operative Extra-oral photographs.



Figure 2: Pre _ operative Intra _ oral photographs.

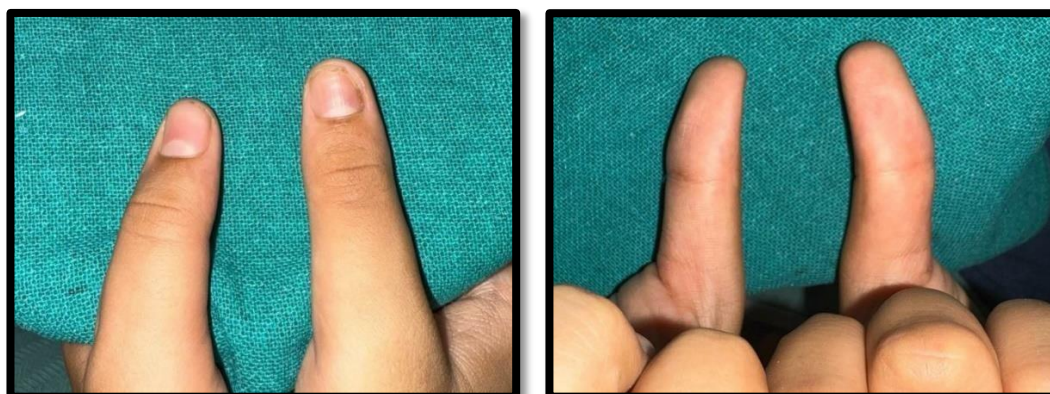


Figure 3: Pre – operative images of Thumb and Nails.

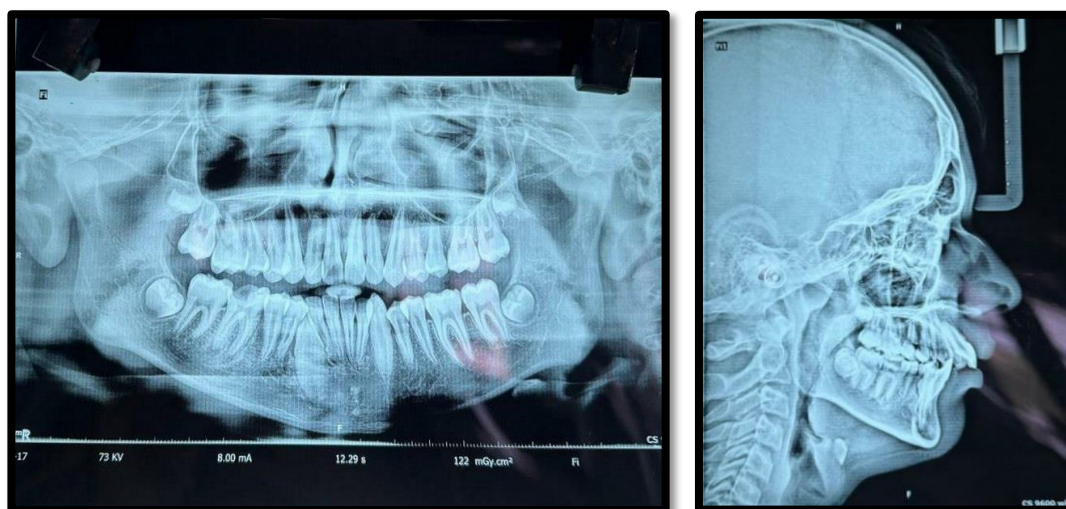


Figure 4: Pre- operative OPG and Lateral Cephalogram.

TREATMENT AND APPLIANCE FABRICATION

An intraoral palatal crib and an extraoral threaded thumb was planned to break the habit. Root canal treatment w.r.t. #46 was advised.

Fabrication of palatal crib: Adams clasps were fabricated on both maxillary first permanent molars, a short labial was fabricated and a palatal crib was made on the palate region. All the components were acrylized using cold cure acrylic resin. Finishing and polishing was done

before adaptation (Figure 5).

Fabrication of threaded thumb guard: A thumb impression was recorded using alginate impression material and poured with dental stone. Acrylization of the thumb impression was done using cold cure acrylic resin. 2 holes were made on the lateral aspect of the thumb guard and a thread was tied through the holes. Finishing and polishing of the thumb guard was done (Figure 6).



Figure 5: Palatal Crib Appliance.



Figure 6: The Threaded Thumb Guard.



Figure 7: Appliances delivered.

FOLLOW UP AND OUTCOME

The first follow-up visit was scheduled one week after appliance insertion to check the appliance's fit (Figure 7). The follow-up visits were scheduled at a monthly interval to assess how well the patient was tolerating the appliance. According to the parents, the patient has been wearing the appliance regularly, and they have observed a marked decrease in habit. A three month follow up revealed cessation of the habit. Root canal treatment w.r.t 46 was also completed.

DISCUSSION

Oral habits are commonly observed among young children, particularly within the 3 to 5-year age group, and represent an integral part of normal developmental behavior. These habits are often adopted as a means of comfort, self-soothing, or emotional regulation during early childhood. However, when such behaviours persist beyond the acceptable developmental age, they can have significant implications on a child's psychological well-

being, facial growth, and dental development.^[6]

Among the various oral habits, thumb or finger sucking is considered one of the most prevalent habit. Studies have demonstrated that the sucking reflex may begin as early as 29 weeks of intrauterine life, highlighting its deep-rooted origin as a natural instinct in infants. While this habit is regarded as physiological and harmless during infancy and early childhood, continued practice beyond a certain age threshold becomes a cause for concern. Most literature suggests that thumb or finger sucking is acceptable up to the age of 5 years, as many children naturally discontinue the habit by this stage. Nevertheless, some researchers advocate for cessation by the age of 3, emphasizing that prolonged persistence can interfere with normal occlusal development and the eruption pattern of teeth.^[4] Prolonged thumb or finger sucking can lead to a variety of dentoalveolar and skeletal changes, including anterior open bite, increased overjet, posterior crossbite, and alterations in tongue

posture and function. These effects, if left unaddressed, may extend into the permanent dentition and necessitate more complex orthodontic interventions. Therefore, early identification and management of such habits are essential to promote optimal orofacial development and prevent long-term complications.^[3]

Dean reported that the fixed palatal crib is a commonly recommended appliance for managing thumb or finger sucking habits. In their study, approximately 80% of children discontinued the habit within one week of appliance placement. However, a retention period of at least six months was advised to ensure long-term stability and prevent relapse.^[7]

This case report demonstrates the efficacy of a combined therapeutic approach utilizing a palatal crib and a threaded thumb guard in the cessation of thumb sucking habit. The thumb guard's design ensured stable fixation, minimizing the risk of displacement or removal during daily activities. The appliance served as a reminder therapy, hindering the thumb's placement within the oral cavity and interacting with the palatal crib, thereby reducing the habit. Consequently, the patient developed increased awareness and consciousness regarding the habit. The thumb guard's aesthetic appeal, enhanced by the use of blue-colored cold cure acrylic resin material with glitter, increased the patient's compliance. The synergistic effect of positive reinforcement from the parents and reminder therapy facilitated the successful elimination of the habit.

The treatment outcome demonstrated a marked improvement in the patient's physical appearance and psychological well-being. The characteristic "dishpan" appearance and chapped fingers, exhibited significant regression. Furthermore, the patient, being an adolescent, displayed enhanced self-esteem and increased confidence, likely attributable to the cessation of the habit and resultant physical improvements. These outcomes are particularly pertinent during adolescence, a period characterized by heightened self-awareness and sensitivity. The patient's improved confidence and self-esteem are likely to have a positive impact on their overall well-being and social interactions.

CONCLUSION

Palatal cribs and thumb guards are highly effective appliances for reducing thumb sucking habits, especially when used in conjunction with psychological management. When combined with psychological management, the effectiveness of these appliances is significantly enhanced. Breaking the habit can have a significant impact on an individual's quality of life, improving their oral health, self-esteem, and overall well-being.

LIMITATIONS

Patient's compliance is necessary for the success of breaking the habit. The extraoral appliance (the threaded

thumb guard) limits the patient for tying the knot by themselves and always requires assistance of parents or caregivers.

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