

# Case Report

## Management of Persistent Non Nutritive Sucking Habit

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### Abstract

Thumb sucking is a common habit among younger children. Usually, the child outgrows this habit by age 2.5-3 years. When a child continues to suck his or her thumb, it can be a cause of potential harm due to peer pressure, ridicule, and shunning. It can also lead to malocclusions. Early detection and appropriate intervention can help in correcting the habit and malocclusion and preventing an orthodontic treatment at a later stage. We are reporting a case of thumb sucking where intervention was done and malocclusion corrected during the growing phase of the child.

**Key Words:** Crib appliance, Interceptive, Malocclusion, Thumb sucking.

### Introduction

Thumb sucking is a form of non nutritive sucking occurring as early as the 29<sup>th</sup> week of gestation. It is seen commonly in infants and peaks at 18-21 months of age. The habit is normal in the first 2-3 years of life. Continuance of habit may cause permanent damage to developing dentition.<sup>1</sup>

Sigmund Freud theory relates finger sucking to the oral phase of child development. If gratification is not complete, and sucking continues beyond the oral phase of child development it leads to fixation. Digit sucking at a later stage is usually considered a sign of regression. Both fixation and regression are the signs of emotional disturbance.

The learned behavior theory stems from an adaptive response and suggests that sucking is an innate urge in infants and that finger sucking is an outlet for an excess sucking urge. When feeding is quickly and efficiently satisfied, the excess sucking urge is expressed as non nutritive sucking.<sup>2</sup> Digit-sucking habit decreases with age and most children abandon this activity by 3.5-4 years of age. On occasion, individuals may continue to exhibit a digit habit throughout childhood and even into the adult years.

Prevalence seems to be influenced by many factors such as sex, birth rank, feeding method, and socioeconomic status. Numerous studies in the dental literature report on the prevalence of digit sucking. The results differ from 1.7% to 47.0%, and many of these investigations report thumb sucking as the most common oral habit.<sup>3, 4, 5, 6.</sup>

The prevalence study of thumb sucking carried out on 3-12-year old, 2517 children (1293 boys and 1224 girls), with different socio-economic status, belonging to villages, suburbs and city areas of Calcutta revealed that non-nutritional sucking habit was predominantly seen in cities, and bottle feeding was found to be the main cause of this habit; in 3-6-year-old children the prevalence of the habit was more in boys than girls but it persisted more in boys with increase in age.<sup>7</sup>

Prolonged digit sucking habit may affect the occlusion and dentofacial structures. Frequency and duration of the habit, intensity of the sucking, relationship of the dental arches and the child's state of health are the factors effective in the development of dental and skeletal problems.

### Case Report

A 7 year old girl reported to our Department of Pedodontia with complaint of space in her front teeth. On History it was revealed that she was a thumb sucker, puts her thumb for at least 6-7 hours a day. The habit was present from infancy. The habit was present only at home, not at school. She had a younger brother who was 4.5 years old who did not suck his fingers. Parents tried ridiculing; shaming the child, applying neem juice extract to her thumb but the child was persistent with the habit. On examination it was found that the child was in mixed dentition period, Class I molar occlusion with anterior open bite, spacing between upper anterior teeth, associated with tongue thrust habit, no posterior cross bite. (Figure1)



Fig 1- Pre operative

The child was found that she wanted to leave the habit but was unable to do so. Treatment plan was to give her fixed habit breaking appliance. Upper and lower impression was made after adapting the bands in upper permanent first molar. Fixed crib was delivered by luting the appliance with Glass ionomer cement on upper permanent first molars.

After 2 weeks, the parents reported that child had discontinued the habit. It was decided to continue the appliance for another 8 weeks so that there is no reversal of habit, to correct the tongue thrust habit which was associated and to allow the eruption of upper permanent lateral incisor. After 8 weeks the parents confirmed that there have been no sucking episodes, anterior open bite had got corrected, and the appliance was removed. (Figure 2, 3).



Fig 2 - Post operative with Fixed Crib appliance



Fig 3- Post operative, anterior open bite corrected

## Discussion

The primary objective of managing orthodontic problems in the mixed dentition stage is to intercept or correct malocclusions that would otherwise become progressively more complex in the permanent dentition or result in skeletal anomalies. Any procedure that eliminates or reduces the severity of malocclusion

in the developing dentition. (Popovich and Thompson 1979, Hiles 1985.) is termed as interceptive orthodontics

Treatment of thumb sucking can be broadly divided as

- (1) psychological approach
- (2) Reminder therapy
- (3) Mechano therapy.

### Psychological approach

Age-appropriate explanations to the child and positive reinforcement are necessary for the success of clinical management.<sup>8</sup> Explaining the effects of digit-sucking and the need for stopping is often all that is required to break the habit. The child is positively reinforced and rewarded for making the effort to discontinue the habit. "Contingency contract" is a contract made between the child and dentist or child and parent. The contract simply states that the child should not suck their thumb for specific period of time. The child should be rewarded if the requirement of the contract is met.

### Reminder Therapy

Painting that tastes bad on the thumbs can make sucking less satisfying. Physical barriers like band aids; gloves etc can also be used. Clinical experiences have revealed that a bitter solution usually has a limited effect.<sup>5</sup> Application of adhesive tape may cause sweating or infection and may also have the risk of reducing blood circulation.<sup>9</sup> Alteration of the child's pajamas to prevent the movement of hand to mouth usually increases the child's frustration and wakefulness.<sup>10, 11</sup>

### Mechanotherapy

In children with deeply ingrained habits and when above interventions did not succeed, appliance therapy can be used. It includes the use of fixed or removable habit breakers designed to make the sucking habit difficult or unpleasant. The palatal crib acts as a physical deterrent to habit as well as a reminder. It is not meant as a punishment but to overcome the habit.

In the present case all the local measures have been tried by the parents themselves. The child wanted to get rid of the habit but was unable to do so. For an appliance therapy to work, the child should have understanding of the purpose of treatment and be motivated. Upper first permanent molars should be fully erupted or, less preferably, the upper second deciduous molars should not be mobile to allow retention of the orthodontic appliance.

Maxillary changes associated with a prolonged sucking habit are proclination of the maxillary incisors<sup>11</sup>, decreased palatal arch width, increased maxillary arch length, cephalometrically increased sella-nasion-point A angle, anterior placement of the maxillary apical base.<sup>12</sup> The response to the changes in the axial inclination of the incisors is anterior rotation of the occlusal plane. Underlying mechanisms of the malocclusion are direct pressure from the digit and reduced intraoral pressure produced by sucking<sup>13</sup>

Effects on the mandible include proclination of the mandibular incisors, decreased sella-nasion-point B angle and increased intermolar distance. Other dental alterations are increased overjet,<sup>11, 13</sup> decreased overbite,<sup>11</sup> posterior cross bite<sup>14, 15 16,17</sup>. There is positive correlation between the distal occlusion and cross bite due to thumb sucking habit.<sup>18,19</sup> When thumb sucking habit exceeded more than 18 months, there is significant occurrence of Class II division 1 of malocclusion, protrusion of upper anterior teeth, skeletal type of malocclusion and anterior open bite.<sup>20</sup> The tongue and lips are also affected by sucking. Lip incompetence and tongue thrust are usually associated with sucking habits. Electromyography studies indicate that circumoral muscles are especially active during digit sucking in addition to the cheek pressure in the canine region<sup>21</sup>.

In the present case there has been correction of thumb sucking, tongue thrusting habit, anterior open bite, spacing of upper anterior teeth which got self corrected with eruption of permanent laterals taking the advantage of growing phase of the child. Intervening harmful habit in a developing dentition promotes favorable developmental changes and removes or suppresses those that are unfavorable. Early interception can eliminate or reduce the severity of a developing malocclusion, the complexity of orthodontic treatment, overall treatment time and cost. It also improves self-esteem in the child and parent satisfaction.

## References

- 1) Graber TM. Thumb and finger sucking. *Am J Orthod* 1945;45:258.
- 2) Johnson ED, Larson BE. Thumb-sucking: Literature review. *ASDC J Dent Child* 1993;60:385-91.
- 3) Nanda RS, Khan I, Anand R. Effect of oral habits on the occlusion in preschool children. *ASDC J Dent Child* 1972;39:449-52
- 4) Infante PF. An epidemiologic study of finger habits in preschool children, as related to malocclusion, socioeconomic status, race, sex, and size of community. *ASDC J Dent Child* 1976;43:33-8
- 5) Alemran SE. A new method in reminder therapy technique for ceasing digit sucking habit in children. *J Clin Pediatr Dent* 2000;24:261-3.
- 6) Fukuta O, Braham RL, Yokoi K, Kurosu K. Damage to primary dentition resulting from thumb and finger sucking. *ASDC J Dent Child* 1997;63:403-7.
- 7) Sarkar S, Chowdhury K S, Mukherjee M M. Prevalence of thumb sucking in children of Calcutta. *J Indian Soc Pedod Prev Dent* 1996;14(1):33-6.
- 8) Van Norman R. Digit sucking: It's time for an attitude adjustment or a rationale for the early elimination of digit-sucking habits through positive behavior modification. *Int J Orofacial Myology* 1985;11:14-21.
- 9) Benjamin LS. The beginning of thumb sucking. *Child Dev* 1967;38:1065-78.
- 10) Morley M. Management of non-nutritive or digit sucking habits in children. A practical approach. *Pediatr Dent J* 1994;16:969-71.
- 11) Larsson E. Dummy and finger-sucking habits with special attention to their significance for facial growth and occlusion. Effect of facial growth and occlusion. *Sven Tandlak Tidskr* 1972;65:605-34.
- 12) Willmot DR. Thumb sucking habit and associated dental differences in one of monozygous twins. *Br J Orthod* 1984;11:195-9.
- 13) Larsson E, Ronnerman A. Clinical crown height in 9, 11 and 13-year old children with and without finger-sucking habit. *Br J Orthod* 1981;8:171-3.
- 14) Modeer T, Odenrick L, Linder A. Sucking habits and their relation to posterior cross-bite in 4-year-old children. *Scand J Dent Res* 1982;90:323-8.
- 15) Popovich F, Thompson GW. Thumb and finger sucking: Its relation to malocclusion. *Am J Orthod* 1973;63:148-55
- 16) Moss JP, Picton DC. The problems of dental development among the children on a Greek Island. *Dent Pract Dent Rec* 1968;18:442-8
- 17) Proffit WR, Field HW, Ackerman JL, Thomas. Contemporary Orthodontics. St Louis Toronto, Canada: The C.V. Mosby Co; 1986. Houston WJ. Mandibular growth rotations-their mechanisms and importance. *Eur J Orthod* 1988;10:369-73
- 18) Melson B, Stensgaard K, Pedersen J. Sucking habits and their influence on swallowing pattern and prevalence of malocclusion. *Eur J Orthod* 1979;1:271-80
- 19) Mylarniemi S. Oral and dental state in Helsinki Pre-school children III. Prevalence of dummy and finger sucking habit and V oral habits and occlusion. *Proc Finnish Dent Soc* 1973;69:47-51.
- 20) Singh SP, Utreja A, Chawla HS. Distribution of malocclusion types among thumb suckers seeking orthodontic treatment. *J Indian Soc Pedod Prev Dent* 2008;26(7):114-7.
- 21) Carvajal R, Miralles R, Cauvi D, Berger B, Carvajal A, Bull R. Superior orbicularis oris muscle activity in children with and without cleft lip and palate. *Cleft Palate Craniofac J* 1992;29:32-6.