

# Unusual sequelae of persistent digit sucking Habit Facial Hyperkeratosis/Hyperpigmentation

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## ABSTRACT

**Background:** Although digit sucking is normal in infants and young children, prolonged duration of these habits might have consequences for the developing orofacial structures and occlusion. It is advisable to intercept the habit between the ages of 4 and 7 years. We report the case of a 9 year old boy who presented with a history of chronic digit sucking habit with associated hyperkeratosis/hyperpigmentation of the left cheek from repeated mechanical trauma from his left ring finger while he sucked his left index and middle fingers. The lesion is about 5mm in diameter. Full orthodontic assessment of the patient was carried out and habit breaking appliance instituted after counseling mother and child. Occlusal problems were reversed after habit cessation. Six months after breaking the habit, the hyperkeratosis/hyperpigmentation of the left cheek was still present even though it is reduced. This is an unusual finding in a child with chronic digit sucking habit.

## Key words:

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## Introduction

Digit sucking (thumb/finger sucking) is one of the most common forms of non-nutritive sucking.<sup>1</sup> Due to frequent dento-facial manifestations digit sucking habit has become of great interest to specialists in Dentistry (Orthodontists and Paedodontists).<sup>2</sup>

At birth, non-nutritive sucking is related to rooting (a reflex in the new born in which stimulation of the side of the cheek or the upper lip causes the infant to turn the mouth and face to the stimulus) and sucking reflexes up to 12 months of age.<sup>2</sup> Up to the age of 2 to

3 years, sucking is considered a normal developmental response,<sup>2</sup> but after this, it is considered a learned habit.<sup>1</sup> The habit is considered prolonged when it is continued up to the age of 7 years and beyond.<sup>3</sup> The prevalence of digit sucking habit is between 2% and 23% in Nigerian children.<sup>4</sup> Other studies<sup>4,5</sup> reported the prevalence of digit sucking habit in an African group (Tanzanians) as 10%. As many as 19% of children in the United States of America continue the habit after their 5<sup>th</sup> birthday.<sup>2,4</sup> The prevalence rate is 17% among Indian children and 30% among Swedish children.<sup>6</sup> but a low prevalence rate of 1% was observed in Eskimo children.<sup>6</sup> The severity of displacement of the teeth and investing tissues depend on the trident conditioning factors, duration which is the amount of time spent on sucking. The longer the duration of each sucking period the greater is the damage,<sup>5</sup> frequency of indulgence is the number of times the habit is practiced. Frequent and continuous sucking is more damaging than occasional short time practice,<sup>5</sup> the intensity of force is the amount of force exerted on teeth while practicing the habit. The more the force applied, the greater is the damage.<sup>5</sup> The sequelae of prolonged (persistent) digit sucking habit are, anterior open bite which interference with occlusal movement of the incisors. This open bite can lead to tongue thrusting problems and speech difficulties,<sup>5,7</sup> proclination and spacing of the maxillary anterior teeth if digit is held



upward against the palate,<sup>5,7</sup> increased overjet, mandibular postural retraction may develop if the weight of the hand or arm continuously forces the mandible to assume a retruded position in order to practice the habit. Pressure in the lingual direction causes lingual tipping of mandibular incisors,<sup>5,7</sup> when maxillary incisors have been tipped labially and an open bite has been developed, it becomes necessary for the tongue to thrust forward during swallowing in order to effect an anterior oral seal,<sup>5,7</sup> if the digit is placed between the upper and lower teeth, tongue must be lowered, which decreases the pressure exerted by the tongue against the lingual aspect of the upper posterior teeth, at the same time cheek pressure against these teeth is increased as buccinators contracts during sucking. Cheek pressures are greatest at the corner of the mouth, therefore maxillary arch becomes narrower than the mandibular arch.<sup>5,7</sup> With these changes in the force system in and around the maxillary complex, it is often impossible for the nasal floor to drop vertically to its expected position during growth. Therefore, digit suckers have a narrow nasal floor and a high palatal vault.<sup>5,7</sup> The habit is also associated with self-mutilating behavior such as hair pulling leading to alopecia (hair loss)<sup>7</sup>.

The aim of this article was to report and discuss a case of hyperkeratosis/hyperpigmentation of the face as a sequela of chronic digit sucking habit, an occurrence which is rare in previous literature.

### Case Report

A 9-year old boy with persistent digit sucking habit presented with various manifestations of the habit in our clinic. Review of the patient's medical, dental, and family histories revealed no significant findings. The patient presented a Class II, division 1 malocclusion with overjet of 10mm and anterior open bite of approximately 4 mm. The permanent teeth in the upper arch were the central incisors, lateral incisors and the first permanent molars.

In the lower arch the following permanent teeth were present, the central and lateral incisors, the canines and first permanent molars. Mother reported that her child persistently sucked his left index and middle finger while his left ring finger rests firmly on the skin of the left cheek (Fig 3). There is a well circumscribed area of hyperkeratosis and hyperpigmentation on the left cheek where his left ring finger rested firmly on while he sucked his index and middle fingers (Fig 4).

After assessment, mother and child were counselled on the deleterious effects of his digit sucking and a fixed habit breaker (goal post) was fabricated with the molar bands cemented on the maxillary first molars. Patient and mother were informed that after this first phase treatment of habit breaking, he shall undergo comprehensive orthodontic treatment to correct other anomalies of his occlusion. Patient was reviewed regularly to assess correction of the anterior open bite and habit cessation. After about 6 months, the patient stopped the sucking habit and anterior open bite was corrected but the hyperkeratosis/hyperpigmentation on the left cheek persisted (Fig 5).



Fig 1 frontal facial photograph showing hyperkeratosis/hyperkeratinization of the left infraorbital area



Fig 2 Frontal facial photograph showing digit sucking pattern of patient



Fig 3 Intra oral photograph- frontal view



Fig 4 Frontal facial photograph showing persisting hyperkeratosis/hyperkeratinization of the left infraorbital area 6 months after habit cessation.

### Discussion

The influence of digit sucking habit on dental arch characteristics and development has long been recognized.<sup>3,8</sup> These include incomplete overbite, anterior open bite, and an increased over jet, and a higher incidence of class II relationship of the canines and molars.<sup>3,8</sup> Such habits are also associated with narrowing of the maxillary arch and increased mandible arch width.<sup>8</sup> Following cessation of the habit, there is generally some spontaneous correction in the form of reduction in open bite and maxillary incisor proclination. The more persistent the habit is, the greater its contribution to the disturbance of forces operating on the teeth.<sup>3,8</sup> In the management of digit sucking habit in this patient, the improvement in occlusion following cessation of the habit was very encouraging for the parent and child; however the persistence of the scarification on the left cheek was quite surprising. Due to the persistence of the digit sucking habit and firm pressure on the skin of the left cheek may have triggered a chronic irritation of the subcutaneous tissue of the area thereby causing the scarification. The patient is the final phase of orthodontic treatment, which in about 6 years after digit sucking habit stopped and the hyperkeratosis/hyperpigmentation on the left cheek remain very visible. This type of injury to the left cheek is a form of mechanical injury. In mechanical injuries, hyperpigmentation or hyperkeratinization or a combination of both can occur.<sup>9</sup> It is documented in literature that to a certain extent the skin may adapt to mechanical stresses by presenting with various reaction patterns ranging from hyperpigmentation to ulceration and hyperplasia.<sup>9</sup> The type of skin reaction depends on the amplitude and frequency of the factor acting on it as well as on the direction of force.<sup>9</sup> In this patient the chronic mechanical trauma from the left ring finger on the left cheek has caused the hyperpigmentation/hyperkeratosis.

The manner of occurrence of this lesion is similar to the group of lesions called "Self Inflicted Skin Lesions" by the European Society for Dermatology and Psychiatry (ESDaP).<sup>10</sup> No similar lesion in a child with

persistent digit sucking has been found in existing literature and the short and long term implications of the lesion is unknown, but there is a cosmetic implication attached to it. Furthermore, there is a possibility that this lesion may predispose to the formation of precancerous lesion which can set off non-melanocytic or melanotic skin cancer in the future.<sup>9</sup> Due to the uncertainty surrounding this lesion on left cheek in this patient, referral to a dermatologist was carried out so as to prevent untoward consequences in the future.

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