

## Case Report

# Unusual Method of Thumb-sucking Prevention Leads to Bilateral Gangrenous Thumbs

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### Abstract:

This is a case report of a toddler whose mother, out of concern for her child and to aid him to stop sucking his thumbs, used a nylon cover secured by a thin elastic band on both thumbs. Ultimately, gangrene resulted, and both thumbs were amputated at the metacarpophalangeal joints. This was an unusual course of management, and a similar case has not been reported previously.

**Keywords:** Gangrenous thumb, thumb sucking.

### Introduction

The sucking reflex begins at an early age in fetuses. Ultrasonography has shown fetuses sucking their thumbs as early as 18 weeks gestation. Thumb sucking is the most common form of nonfeeding oral activity in infants and during early childhood. Between 75 and 95% of all infants suck their thumbs. Most children start during the first year of life, and the prevalence then diminishes with age. Six percent of thumb-sucking babies continue the habit past age 1, and only 3% continue past age 2. Thumb sucking should be considered normal in infants and toddlers and should be tolerated.<sup>1-7</sup> It should decrease

by age 3-4 and stop by the time the toddler is 5 years old.

### Case Report

A child, age 1 1/2, presented in May 1993 with blackish discoloration of the terminal phalanx to the middle of the proximal phalanx on both thumbs. The mother said she wrapped both thumbs with a nylon cover and secured it firmly by a thin elastic band to prevent child from sucking his thumbs. When the child started crying continuously day and night for about 72 hours, the mother examined the child and found both thumbs blackened.

On examination, blackish discoloration of both thumbs was observed (Figure 1). Both thumbs showed gangrenous changes, encircled with redness and ulceration.

The child's mother was asked if she wanted her son's thumbs amputated. Initially she declined, but then she agreed. Disarticulation was performed at the level of the metacarpophalangeal joints of both thumbs under antibiotic cover. The postoperative period was smooth, and the wounds healed without

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**Figure 1. Anterior view of both hands with gangrenous thumbs.**



**Figure 2. Front view of both hands 2 years after the amputation.**

infection.

The patient was reexamined 2 years later at about age 3. Figure 2 shows the front view of both hands 1 year later, and Figure 3 shows the child holding a spoon and a pencil 2 years after the operation.

Radiological examination was done in 2004 during a regular check up; no abnormal changes were observed (Figure 4).

At last presentation in May 2007, the patient, age 14, presented complaining of a painful thickened stump on the right hand. The mother worried about further amputation. Nothing more than thickened yellowish skin at the terminal stump of the right thumb on the palmar aspect of the first ray was found (Figure 5). X-ray examination showed calcification on the dorsal aspect of the head of the first metacarpal bone of the right hand (1 cm long and 0.5 cm wide). The left hand was not affected (Figure 6).

A hand function examination was carried out for writing (Figure 7).

Reassurance along with a prescription for pain medication and advice for regular follow-up were given.

### Discussion

Finger sucking, and especially thumb sucking, is a common nonnutritive oral habit. It is more common in higher socioeconomic groups and in girls. While it is very common in Western societies, it is less common in some parts of Africa and Asia. Two essential reflexes are present in the infant at birth and relate to this drive. They are the sucking reflex (which remains until 12 months of age) and the root-



**Figure 3. Two years after the amputation, the child demonstrates his adaptation of holding a pencil and spoon.**

ing reflex (which remains until 7 months of age). However, it is unclear when normal sucking behavior becomes an abnormal habit.<sup>3</sup>

In infants, sucking is a natural reflex that often begins in the womb. Through sucking, babies learn a lot about their bodies and the world around them. They suck on their fingers, clothing, and toys. From this action they learn what is pleasing and what is uncomfortable. Sucking on an ice cube or cool teething ring feels good when the first teeth are trying to break through, but when the same teething child sucks on a hard plastic toy, the child may experience discomfort. Young children also use sucking to soothe and comfort themselves. The action is



**Figure 4.** The anteroposterior view of both hands, which shows the level of disarticulation without evidence of calcification.



**Figure 6.** The anteroposterior view of both hands, showing calcification on the dorsal aspect of the head of the first metacarpal bone of the right hand.

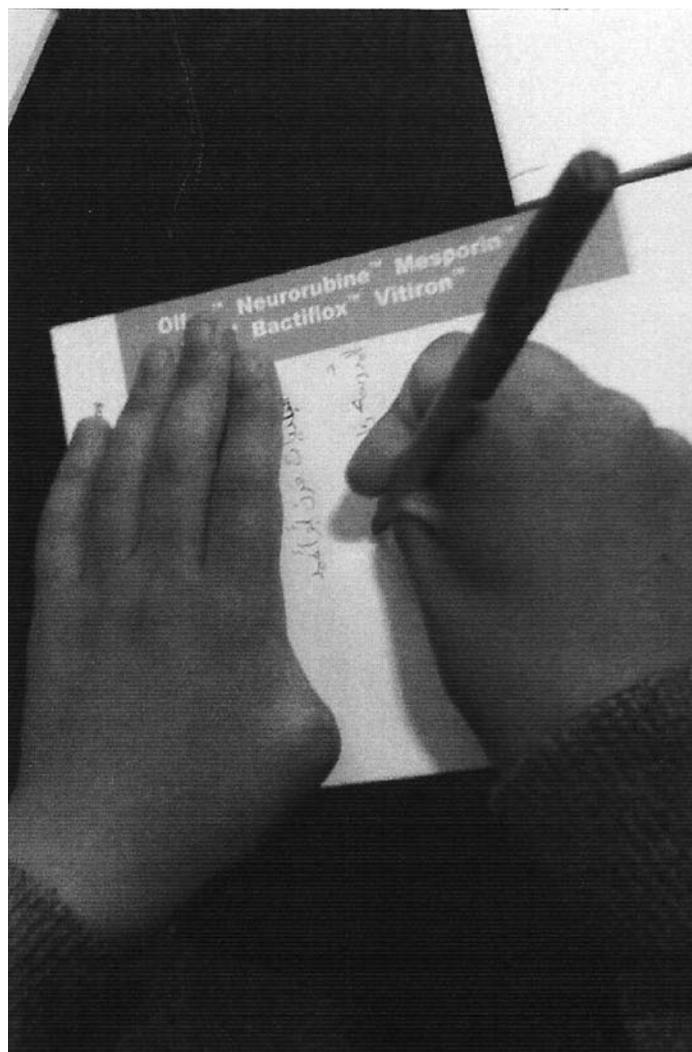


**Figure 5.** Yellowish discoloration of the right thumb stump.

relaxing and often induces sleep.<sup>8</sup> Nevertheless, prolonged thumb sucking can lead to serious dental and speech problems. Persistent digit sucking habits are an important etiological factor for malocclusion due to increased maxillary prognathism: rotation of the maxillary plane downwards posteriorly and upwards anteriorly, and inflammation of a digit caused by chronic sucking. Also, sucking is combined with trichotillomania, which leads to alopecia.<sup>3,9</sup>

Thumb sucking should be ignored in infants and toddlers.

In an older child there are some practical ways to help the child quit this habit, such as keeping the



**Figure 7.** Fourteen years after the first presentation, the patient demonstrates his adaptation of holding a pencil.

child's hands occupied with their favorite activities, using a bandage, or applying a bad-tasting substance. If the bandage or coating comes off, it should be replaced without the parent being critical or causing embarrassment to the child. A parent can use a special glove with a ribbon threaded through the top so that it can be fitted to the wrist during times of need.<sup>10</sup>

Parents' attempts to stop thumb sucking by wrapping the thumbs with a piece of nylon firmly secured with an elastic ring reflects a lack of awareness and education in the management of this common problem of infancy and early childhood. This is a nonreported method of thumb sucking prevention.

Gower et al<sup>10</sup> reported that parents often begin to worry about a child if he or she continues thumb sucking, as happened with this patient's mother. Concerned parents may want to speak to a pediatrician or dentist to learn about preventative devices.<sup>3,10,11,12</sup>

Polyakov<sup>3</sup> reported that a majority of specialists are not in favor of intervening before age 4-5 on the assumption that in most cases the habit disappears spontaneously. There are also many psychological reasons to hold off.

Continuous crying before removal of an elastic ring has been explained by MacGowan<sup>13</sup> in Ireland and Stammers in England,<sup>14</sup> where it is mentioned that the important clinical feature of acute arterial interruption complicating a limb injury is severe pain in the limb. This coincides with this patient's symptoms. In this case, thumb covers fixed firmly by thin elastic bands for more than 72 hours acted as a tourniquet.

Two hours is the most generally accepted upper limit. After 6 hours, there is a degree of tissue reaction in the form of local induration, followed by vasoconstriction with a complete loss of blood supply to the tips of the fingers, which have no collateral circulation and results in gangrene.<sup>13-19</sup>

In conclusion, lack of education about thumb-sucking prevention may lead to serious complications, as in our case. Increasing awareness and discussion of the thumb-sucking habit by pediatricians and family practitioners during periodic check ups will greatly help to alleviate parental concerns and lead to better management of this common condition of infancy and early childhood.

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## References

1. Aarts C, Hörnell A, Kylberg E, et al. Breastfeeding patterns in relation to thumb sucking and pacifier use. *Pediatrics* 1999. Oct;104(4):e50.
2. Lucich M. Health and safety notes, California childcare health program, Thumb, finger and pacifier sucking [online]. Revised Nov 2005 [cited 2007 June 10]. Available from: <http://www.ucsfchildcare-health.org/pdfs/healthandsafety/thumbsen1105.pdf>
3. Polyakov. Digit sucking before the age 4.5: Interpretation and some management considerations. *International Pediatrics* 2002. 17(4):203-8.
4. Leung AKC, Robson WLM. Thumb sucking. *American Family Physician* [Online]. 1991 Nov [Cited 2007 June 10]. Available from: [http://findarticles.com/p/articlesmi\\_m3225/is\\_n5\\_v44/ai\\_11666506](http://findarticles.com/p/articlesmi_m3225/is_n5_v44/ai_11666506).
5. The wisdom tooth home page. Thumb-sucking [Online]. [Cited 2007 June 10]. Available from: <http://www.umanitoba.ca/outreach/wisdom-tooth/thumb.htm>.
6. Thumb sucking. Children's Hospital of Wisconsin [Online]. [Cited 2007 June 10]. Available from: <http://www.chw.org/display/ppf/docid/22160/router.asp>.
7. Schmitt BD. Thumbsucking. Bantam books. Mckesson provider technologies [online]. 2006 [cited 2007 June 10]. Available from: [http://www.med.umich.edu/1libr/pa/pa\\_thumb-suc\\_hhg.htm](http://www.med.umich.edu/1libr/pa/pa_thumb-suc_hhg.htm).
8. Goode CB. Five tips to stop thumb sucking. [online]. Available from: <http://www.babyzone.com/toddler/a2126/1>.
9. Moore MB, McDonald JP. A cephalometric evaluation of patients presenting with persistent digit sucking habits. *Br J Orthod* 1997. Feb;24(1):17-23.
10. Gower T, Kelly AL, Lundgren L, et al. 9 Home Remedies for Thumb Sucking [online]. 2007 [cited 2007 June 10] Publications International. Available from: <http://health.howstuffworks.com/home-remedies-for-thumb-sucking1.htm>.

11. Jenna P. Directions for making a homemade thumb-sucking guard [online].[cited 2007 June 10] <http://www.Choosinghome.Com/Homemaking/Hmtsg.pdf> Available From: URL://www.Choosinghome.Com/Homemaking/Hmtsg.pdf
12. Dental health for children 0-6 years; information for maternal and child health nurses. Public Health Division, Department of Human Services, Victorian government [online]. 1998 [cited 2007 June 10]. P1-30. Available From URL, [http://www.health.vic.gov.au/healthpromotion/downloads/dental\\_health.pdf](http://www.health.vic.gov.au/healthpromotion/downloads/dental_health.pdf).
13. MacGowan W. Acute ischaemia complicating limb trauma. *J Bone Joint Surg Br.* 1968 Aug;50(3):472-81.
14. Stammers FA. Peripheral arterial disease; some points of common interest to general and orthopaedic surgery. *J Bone Joint Surg Br.* 1954 May;36-B(2):209-17.
15. Klenerman L. The tourniquet in surgery. *J Bone Joint Surg Br.* 1962 Nov;44-B(4):937-43.
16. Harrington AC, Cheyney JM, Kinsley-Scott T, et al. A novel digital tourniquet using a sterile glove and hemostat. *Dermatol Surg* 2004. July;30(7):1065-7.
17. Tang WYM. A Latex finger strip and nylon zip-tie combo as a tunable digital tourniquet. *Dermatol Surg* 2007. June;33(6):713-5. Available From URL, <http://www.blackwell-synergy.com/doi/abs/10.1111/J.1524-4725.2007.33148.X?Journalcode=Dsu>.
18. Nadim A, Chandra P. Use of a colored rubber glove as a finger tourniquet. *European Journal of Trauma* 2003. June;29(3):168-9.
19. Tomaino MM, Goitz RJ, Medsger TA. Surgery for ischemic pain and Raynaud's phenomenon in scleroderma: a description of treatment protocol. *Microsurgery.* 2001;21:75-9.