Lip bruising from sucking injuries in infants: case series

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Contributions: (I) Conception and design: K Simonton, MC Pierce; (II) Administrative support: None; (III) Provision of study materials or patients: K Simonton, T Valvano, A Rabbitt, P Jain; (IV) Collection and assembly of data: K Simonton, J Jaffe, W Moser; (V) Data analysis and interpretation: K Simonton, J Jaffe, W Moser; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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Background: Bruising is the most common injury of physical child abuse. More specifically, bruising of the face and oral mucosa such as the lip, particularly in those who cannot cruise, raises concerns for non-accidental trauma. While self-inflicted sucking bruises are a known entity within the neonatal and infant population, they are typically observed on the arms of infants and the literature of benign sucking bruises on the lip of infants is limited to one case report.

Case Description: This retrospective multi-center non-consecutive case series describes four cases of infant lip bruising secondary to a benign sucking injury, a mechanism previously limited to one case report in the literature. The patients described are ages 3–7 months old who presented with a lip bruise that resulted in varying degrees of non-accidental trauma workup and a final diagnosis of benign sucking injury.

Conclusions: This article illustrates an important non-abusive consideration for healthcare professionals when evaluating pediatric patients with lip bruising by describing infant presentations of self-inflicted sucking bruises to the lower lip. Self-inflicted sucking injury can provide a plausible mechanism to the isolated finding of lip bruise in the context of a supporting history while recognizing that despite this possible explanation, the consideration of child physical abuse remains important in cases of facial bruising among young children.

Keywords: Child abuse pediatrics; non-accidental trauma; case series

Received: 24 October 2023; Accepted: 14 December 2023; Published online: 06 March 2024.
doi: 10.21037/jeccm-23-131
View this article at: https://dx.doi.org/10.21037/jeccm-23-131

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Introduction

Bruising is the most common injury of physical child abuse (1). Prior to increased mobility with the onset of cruising, bruising is uncommon in infancy and should warrant consideration of an abusive injury (2-4). Specific bruising locations including areas of the face and oral mucosa are atypical of accidental injury and therefore raise concern for abusive trauma, particularly in young infants (5). The face has been identified as the most common site of abusive bruising, particularly areas of soft tissue, such as the lips, away from underlying bony prominences (6,7). Self-inflicted sucking bruises and blisters are a known entity within the neonatal and infant population, and are typically seen on the arms (8,9). Sucking blisters to the lips have been reported previously (10-14), but only in neonates. Lip bruising secondary to infant sucking has been reported only once in the academic literature as an isolated case report (15), but no other reports have been published regarding this topic. The purpose of this retrospective multi-center non-consecutive case series is to continue to introduce self-sucking as a potential accidental mechanism for bruising to the midline lower lip in young children and infants. We present this article in accordance with the AME Case Series reporting checklist (available at https://jeccm.amegroups.com/article/view/10.21037/jeccm-23-131/rc).

Highlight box

Key findings

- Introduction of self-sucking as a potential accidental mechanism for bruising to the midline lower lip in young children and infants.

What is known and what is new?

- Bruising is the most common injury of physical child abuse and specific bruising locations of the face and oral mucosa are atypical of accidental injury and therefore raise concern for abusive trauma, particularly in young infants.
- This case series adds to the literature by describing infant presentations of self-inflicted sucking bruises to the lower lip, which can provide a plausible mechanism to this isolated finding in the context of a supporting history.

What is the implication, and what should change now?

- Recognition that an alternative mechanism to non-accidental trauma can be plausible in identification of a lip bruise in an infant, while continuing to consider child abuse as an important mechanism of injury.

Case presentation

Patient 1

A 4-month-old otherwise-healthy child presented to a pediatric emergency department (ED) with a lower lip bruise. Parents received a call from the patient's daycare on the day of presentation after noticing a new bruise on the bottom lip which was not present in the morning. Parents and daycare denied any known trauma, falls, or other injuries. There was no personal or family history of bleeding disorders. On further history, parents denied pacifier use but stated the patient sucks on their lips frequently, which was demonstrated via video observed by a medical provider.

On physical exam, vital signs were age appropriate and the patient was well appearing and in no distress. There was a bruise on the midline lower lip with associated petechiae (see *Figure 1*) as well as congenital dermal melanocytosis on buttocks and bilateral ankles, both of which had been present since birth per parental report. The rest of the exam was unremarkable including normal intraoral exam and intact frena. Given unclear etiology of the lip bruise, social work and the child abuse pediatrics team were consulted. A skeletal survey and non-contrast computed tomography (CT) of the head were obtained and normal. Blood work to assess for evidence of trauma or bleeding diathesis was not obtained as it was deemed to be low yield in the setting of a focal injury and video evidence of a potentially plausible mechanism. No risk factors for maltreatment were identified during a psychosocial assessment by the social work team. The patient's isolated lip bruise was diagnosed as a transient, benign contusion from a sucking mechanism and the patient was discharged home with family. Child Protective Services (CPS) was not involved.

Patient 2

A 3-month-old otherwise-healthy child presented to his primary care provider by his mother for concerns of lip bruising. Mother reported she had seen a bruise of the lip two weeks prior which subsequently resolved quickly, but then noticed the bruising returned in the same location the night before the visit (see *Figure 1*). She reported the baby had been engaged in tummy time and mother observed him sucking his lower lip just prior to onset of the bruising. Additionally, a nurse in the primary care physician's office

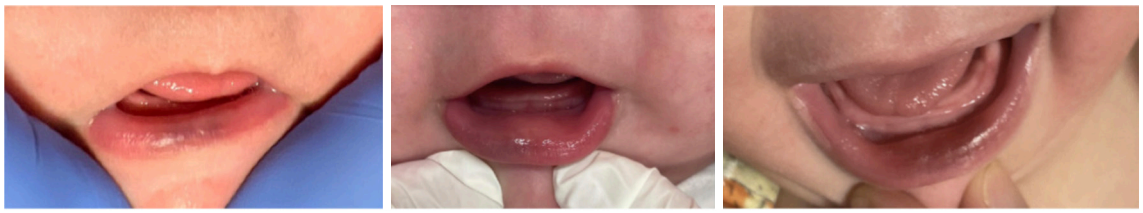

Figure 1 Lip bruises from sucking injuries.

also observed him sucking his lower lip in the area of the bruise. The patient was in the care of his parents and did not attend day care. Parents denied any known trauma, falls, or other injuries. There was no personal or family history of bleeding disorders.

The baby was referred to dermatology who confirmed the lesion was bruising on the midline lower lip. The hospital-based child abuse pediatrics team was consulted. A skeletal survey, urine drug screen, and blood work including a complete blood count (CBC), coagulation labs [prothrombin (PT) and partial thromboplastin time (PTT)], von Willebrand screen, hemophilia screen with factors 8 and 9, and liver and pancreatic enzymes [alanine and aspartate transaminases (ALT, AST), amylase, lipase] were obtained and normal. A report was made to CPS. No risk factors for maltreatment were identified during a psychosocial assessment by the social work team. The mother provided additional videos and photographs of the infant sucking on his lower lip in the area of the bruise. Following CPS investigation, it was determined that there was no evidence of child maltreatment in this patient and the etiology of the lip bruise was determined to be secondary to a benign sucking injury.

Patient 3

A 7-month-old otherwise-healthy child presented to a pediatric ED for parental concern of respiratory distress, and was found to have a lower lip ecchymosis. On history, parents witnessed several episodes of transient increased work of breathing lasting a few minutes at a time while the patient became excited or upset prompting the visit to the ED for evaluation. These episodes were not associated with cyanosis or color change. The patient's family had noted lower lip discoloration beginning the afternoon of presentation that was persistent and did not vary with the respiratory episodes. The patient was in the care of his parents and did not attend day care. Parents denied any known trauma, falls, or other injuries. There was no personal or family history of bleeding disorders.

On physical exam, vital signs were all within normal limits for age and the patient was well appearing and in no distress. The patient had no respiratory abnormalities at the time of the ED visit and had a normal cardiopulmonary exam and oxygen saturation level. Exam was notable for a midline lower lip ecchymosis (see *Figure 1*), but otherwise normal oral exam including intact frena. The patient had a 3 mm superficial scratch on his chin which mother explained occurred when the patient was playing in her arms and hit his head on mother's tooth. The patient had an otherwise unremarkable skin exam. During the exam, the patient was observed by the ED providers using a pacifier which was noted to result in sucking in of the lower lip. It was determined that this witnessed event was consistent with a mechanism of injury leading to lip bruising. The child abuse pediatrics and social work teams were not consulted and no blood work or imaging studies were obtained. CPS was not involved. The patient was discharged home with the diagnosis of a sucking injury with associated lip bruise.

Patient 4

A 3-month-old otherwise-healthy child presented to a pediatric hospital as a referral from the patient's primary care physician for an evaluation of a lower lip bruise. On history, parents noticed a pale bruise to the patient's lower lip on the morning of presentation following a bottle feed and pacifier use. The patient appeared fussy throughout the day, curling in her lower lip. The bruise continued to become darker in color, prompting parents to make a virtual appointment with their pediatrician who then referred them to the ED. The family reported that the infant is bottle-fed with room-temperature formula and sucks on a pacifier and their own fingers. The patient was in the care of his parents and did not attend day care. Parents denied any known trauma, falls, or other injuries. There was no personal or

family history of bleeding disorders.

On physical exam, the infant was alert, well-nourished, and in no distress. There was a midline lower lip ecchymosis with the remainder of the exam unremarkable, specifically with no other bruising or cutaneous lesions (no photo available, but the appearance and location of this patient's bruise was consistent with the other bruises shown in *Figure 1*). During the ED evaluation, the patient was not directly observed to suck on her lower lip. The child abuse pediatrics team was consulted to evaluate for nonaccidental trauma and occult injury evaluation was pursued including a skeletal survey and rapid magnetic resonance imaging (MRI) of the brain which were negative for injury or abnormalities. Blood work including a CBC, coagulation labs (PT, PTT), and liver and pancreatic enzymes (ALT, AST, amylase, lipase) were obtained and normal. No risk factors for maltreatment were identified during a psychosocial assessment by the social work team. CPS was not involved and the patient was discharged home with a diagnosis of a sucking injury with associated lip bruise.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent for publication of this case series and accompanying images was not obtained from the patients or their relatives after all possible attempts were made.

Discussion

In this case series, we provide a description of self-inflicted sucking bruises to the lip in infants to add to the limited report currently present in academic literature (15). There is strong literature support to evaluate infants with facial bruising for possible physical abuse, as self-inflicted mechanisms are rare (1-7,11). Infant bruising that is unexplained or occurs when a child is pre-mobile raises concerns for physical abuse in the absence of an underlying hematologic disorder (2,5). Recommendations for evaluation of children with bruising concerning for abuse includes screening for occult fractures in children less than 2 years old and head imaging (non-contrast head CT) in children less than 6 months old (16,17). Given that bruising is often a sentinel injury prior to more severe abuse, even without occult injuries identified on complete abuse evaluation, unexplained bruising should raise concern for abuse and report to investigative agencies should be strongly considered (18).

The four cases presented in this series have several commonalities. Unlike many of the previously described arm sucking bruises and sucking blisters in the literature (8-13), these infants were outside the neonatal age range. Interestingly, infants in three of the cases (1, 2, and 4) were 4 months of age and younger, an age where any bruising carries high specificity for abuse (3). Cases 3 and 4 involved pacifier use and cases 1, 2 and 3 had a history of lower lip sucking. In two cases (1 and 2), caregivers provided videos of the infant sucking on their lower lip and in case 3, the sucking action with pacifier use was witnessed by a medical provider. Three of the cases (1, 2 and 4) had evaluation by child abuse pediatricians including screening for occult injuries without any further injuries identified on workup. CPS was involved in one case (case 2) with no identified risks of concerns for maltreatment. These variations in reporting and work up emphasizes the need for this research in order to alert clinicians to a possible benign mechanism of lip bruising in a child of this age which could improve consistency between providers.

While the patient in case 4 was not directly observed sucking on her lip in the ED, it does not exclude it as a plausible mechanism given its near-identical appearance to the other cases included and the lack of additional injuries or concerns identified during the medical evaluation. It is important to recognize that children will not always display the reported behavior during an evaluation and pattern recognition of injuries is an essential tool used by child abuse pediatricians. As with all cases of infant bruising, it is important to cautiously evaluate the injury including any reported or witnessed events, and carefully consider screening for occult injuries as was pursued in case 4.

Though limited in the academic literature, numerous cases of lower lip bruising from sucking and pacifier use have been described and pictured on online parent forums for over a decade (19). As was described in case 2 of this series, the bruising likely quickly resolves in most cases before caregivers pursue medical evaluation. Awareness of the implications of bruising in young infants and subsequent referrals to child protection teams by frontline providers may also be heightened through increased media presence and education about abusive bruising with spread of the TEN-4-FACESp mnemonic (5). Prior to this increased awareness, subtle bruising to the lower lip may not have raised concerns in frontline providers.

The ability of infants to produce self-injury through sucking is supported by literature describing sucking bruises and blisters on the arms (8-10). This case series adds to

the literature by describing infant presentations of self-inflicted sucking bruises to the lower lip, which can provide a plausible mechanism to this isolated finding in the context of a supporting history. Despite this possible explanation, the consideration of child physical abuse remains important in cases of facial bruising among young children. The utility of further workup for occult injuries and report to CPS should be carefully considered in the context of the child's history, physical examination and psychosocial environment, ideally in conjunction with a child abuse pediatrician if available. An additional limitation of this case series includes the lack of follow up with the patients and families to better understand any long-term implications of this mechanism of injury.

Conclusions

This case series illustrates an important non-abusive consideration for healthcare professionals when evaluating pediatric patients with lip bruising. It describes infant presentations of self-inflicted sucking bruises to the lower lip, a plausible mechanism for the isolated finding of a lip bruise in the context of a supporting history. Despite this possible explanation, the consideration of child physical abuse remains important in cases of facial bruising among young children.

Acknowledgments

Funding: None.

Footnote

Reporting Checklist: The authors have completed the AME Case Series reporting checklist. Available at https://jeccm.amegroups.com/article/view/10.21037/jeccm-23-131/rc

Peer Review File: Available at https://jeccm.amegroups.com/article/view/10.21037/jeccm-23-131/prf

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://jeccm.amegroups.com/article/view/10.21037/jeccm-23-131/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent for publication of this case series and accompanying images was not obtained from the patients or their relatives after all possible attempts were made.

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doi: 10.21037/jeccm-23-131
Cite this article as: Jaffe J, Simonton K, Moser W, Valvano T, Rabbitt A, Pierce MC, Jain PG. Lip bruising from sucking injuries in infants: case series. J Emerg Crit Care Med 2024;8:2.