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Review Article

The Complications of Applying the Tooth Gel to Relieve the Teething Pain in Babies

Karimi M*

Department of Pediatrics Dentistry, Sepideh Dental Clinic, Iran

***Corresponding Author**: Karimi M, Department of Pediatrics Dentistry, Sepideh Dental Clinic, Iran.

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Abstract

Baby tooth gel is very effective in reducing tooth pain in infants when it comes to teething, but most experts suggest that instead of using these gels, teething toys can be an appropriate tool to soothe the pain. According to health professionals in FDA, there have been reports of the incidence of methemoglobinemia and the potentially fatal side effects of benzocaine anesthetic sprays used to numb mouth and throat during medical use or use at home. Unfortunately, Benzocaine anesthetic gels or solutions are sold in the pharmacy without a prescription and are frequently used to relieve pain during tooth decay and burning of the mouth and gums, and etc. Hence, this type of anesthetic is not recommended by the FDA for children under two years of age.

Keywords: *Tooth Gel; Pain; Babies*

Introduction

In the old days, in order to reduce the pain and itching of the teeth in newborns, the sugar was ground to powder and placed on the gum, which was a very wrong way that caused infection, wound, and swelling of the gum. Some people also cooked the meat and gave it to the baby to act as a plastic denture that also contained many contaminants. Carrots were also common in some families, which put the baby at risk of choking. Therefore, what should be done?

Methemoglobinemia (Blue Pediatric Syndrome), is a very rare but dangerous disease which can happen due to the oxidation of iron [1,2] present in the red blood cell hemoglobin. This condition has been reported with the use of baby tooth gel in children, especially under the age of two [3-7]. In the absence of oxygen, their enzymatic system would be impaired; they are not capable of reducing methemoglobin to hemoglobin, and consequently, methemoglobinemia occurs [8-10].

Although it is difficult for parents to see the pain of their sweetheart while teething, it's harmful to use tooth gel containing lidocaine [11,12] in these cases, more than it is usefulness. The baby's tooth gel is highly effective in reducing the pain of teething due to having an anesthetic substance in the gel, but most experts suggest that these gels should not be used. Instead, they recommend using a no plastic teething toys. In this part, we brief an overview of the disadvantages of the baby's tooth gel, and the strategies for reducing the pain of the child's gums.

Teething

Teething is a physiological phenomenon associated with other physiological phenomena such as increasing saliva of the child. One of the main complications and symptoms of tooth eruption is restlessness and abdominal discomfort, and gingival itching [13-18]. To relieve

this itching, children take everything into the mouth and press on their gum. This brings about the growth of the tooth faster. Therefore, it is not necessary to use a tooth gel to reduce the gum pain of these infants.

Parents should not be worried about their baby's teeth. Infants begin to have teeth at the age of five months to one year old. Teething is accompanied by itching, pain, drooling, fussing, irritability, crying, and sleeplessness [13-18].

Complications of baby tooth gel

The baby's tooth gel is used to relieve pain on the baby's gums because of its anesthetic compounds. Pain relievers and medications that are applied to the gums are not necessary or useful. Because of the high absorption potential of anesthetics such as Xylocaine or Benzocaine in the gum when it comes to teething the baby, an application of tooth gel may cause negative effects on the baby's gums.

According to health professionals and patients from the US Food and Drug Administration, there are reports of Methemoglobinemia and potentially lethal side effects associated with the use of Benzocaine anesthetic sprays that have been used for anesthetizing the oral cavity during medical procedures [19-22].

It is also reported that using Benzocaine anesthetic gels that are sold at the pharmacies without a prescription for relieving pain (in case of teething or having burning sensations of the mouth and gums) can show dangerous side effects. Therefore, the use of this anesthetic is not recommended for children under the age of two at all except under the advice and supervision of a healthcare professional [13,23].

Methemoglobinemia (blue children syndrome), which is a very rare but dangerous disease (iron oxidation in hemoglobin of red blood cells). In this case, oxidized hemoglobin cannot carry oxygen, and in the absence of oxygen, body cells may die, or causes bruise the skin [24,25].

In people over the age of one, there is a rapid ability to convert methemoglobin to hemoglobin, and despite the high levels of nitrate and nitrite, the amount of methemoglobin remains low in red blood cells. However, in children under six months of age, due to the lack of evolution, their enzymatic system is not able to reduce methemoglobin to hemoglobin, and hence methemoglobinemia will happen [26]. The same thing happens in elderly people who their enzyme system has damaged for some reasons.

The FDA cautioned against the risk of using Lidocaine gel 2% to reduce teething pain in newborns. According to this organization, the use of the lidocaine gel has not been approved by the FDA, and accidental ingestion of this drug leads to serious brain damages and heart problems in newborns [27-29].

Symptoms associated with lidocaine ingestion include anxiety, dizziness, vision problems, vomiting, drowsiness, and shivering. These complications also increase the risk of choking and jumping food into the throat. The FDA has demanded the installation of a serious warning label on the packaging of this drug. Furthermore, in some cases, it will also cause a child's seizure [30] and the child may bite his tongue due to anesthesia in that area.

Parents should stay away from teething tablets that contain the plant poison belladonna and gels with Benzocaine. Belladonna and Benzocaine are marketed to relieve child's pain, but the FDA has issued warnings against both due to potential side effects [29].

A search of the FDA's Adverse Event Reporting System (AERS) database through March 16, 2011 identified 21 cases of methemoglobinemia associated with the use of OTC Benzocaine gel or liquid products [31,32].

Dosage

Most pediatricians do not recommend the application of tooth gel for children under the age of two at all [13,23]. If there is an exception under the advice and supervision of a healthcare professional, the amount of gel should be very low. The suggested amount of this gel

is given in the amount of a pea, 2 - 3 times a day on the painful area [33]. Notice the baby's mouth should be completely dry before using the child's tooth gel.

Fever relationship with the eruption of the primary teeth

The pediatricians believe that when the baby's fever occurs during the tooth eruption, the eruption is not merely the cause. When the teeth are going to get out of the gum, the gum starts to open, and the baby due to the pain will take his hand into his mouth, hence, the gum will be infected, and as a result of viral or bacterial infection, the baby will develop the fever.

If the child's restlessness is severe, Acetaminophen (Paracetamol) can be used to relieve symptoms. The pediatricians say it is the best to use one teaspoon of acetaminophen for every 6-hours (at a dose of 10 - 15 mg/kg/dose every 6 - 8 hours) [34] when the teeth are erupting which does not cause any problem for the baby. But if itching and ache are not severe, let the process of teething pass naturally. Drooling is also a sign of tooth eruption.

In either case, saliva is not a problem and is not a cause of diarrhea or wounding around the baby's mouth. Fever and diarrhea, although not so much related to the tooth eruption, are seen in some children with its onset. The concurrency of diarrhea, fever and tooth eruption has two main causes: first, when the teeth are developing around 4 - 6 months of age, the child's immune system gradually becomes independent of the mother; resulting in reducing the body's resistance and causing symptoms such as fever and diarrhea. Secondly, at this time, children will take hands or anything into their mouths to relieve the itching of the gums that causes the microbes to enter the body which may affect and upset the gastrointestinal system [35-37].

Popular alternative

Application of teething toys is a great idea to soothe the baby’s aching gum which will save both baby’s fingers and mother's from those sharp bites. There is a lot of cool teething toys on the market that makes mothers a little confused. Some are cheap, some expensive, some innovative; and some are actually full of nasty toxins and harmful chemicals.

When it comes to toys that go into the little baby's mouth, parents should be very strict on the selecting. Parents make sure that the teething toys has been selected is a non-toxic one and won’t leach any chemicals in their little bodies. Teething toys should be made from those materials which are safe for the baby. Below there is a list of great choices to shop from:

- Natural wood teething toys
- Natural rubber teething toys
- Silicone teething toys.

When shopping for non-toxic teething toys, parents should avoid of any teething toys are made from plastic and ones that contain BPA/BPS (endocrine disruptors), PVC/vinyl (the most toxic plastic), fragrances, or phthalates. Parents should also be aware of cheap wooden toys (old, cheap, painted wooden toys) may contain lead [38,39].

For children suffering from gum pain, Parents can buy shaky teething toys those one that when the baby begins to bite on that, it starts shaking which is a great and lovely thing for a child to have. Some types can be placed in the refrigerator to show a mild anesthetic effect while using. Do not put the teething toys in the freezer.

It is advisable to hang this toy around the neck of the child so that it does not fall down on the floor and to be contaminated.

Other strategies for reducing teething pain

The baby's small and soft gums are not able to tolerate too much teething pain, and for this reason, these little angels always suffer from restlessness, crying, and sickness in the period of teething. Healthcare professionals and consumers are advised to consider the American

Academy of Pediatrics' recommendations for treating teething pain instead of using the benzocaine teething products [13,23].

To be able to partly relieve this pain from the beloved child, parents will be recommended to try the following:

- **Gum massages:** To do this, parents need to have a clean finger and rub the finger down the child's gums slowly and gently. This type of massage has a sedative effect.
- **Compressed cool towels:** Soak a clean towel in water, breast milk or chamomile tea, then place the wet towel in the refrigerator to cool. Provide the cool and wet towel to the baby to bite on to reduce gum pain.
- **Cold foods:** If the baby has started eating solid foods, parents can use cold foods such as applesauce or yogurt to relieve his gum pain.
- **Frozen foods:** Colds and ice help reduce the gum pain of teething children. Some pediatricians believe if the child is allowed to eat at that age, eating frozen food such as frozen bananas or milk are also good ways to reduce pain.
- **Pacifier in ice:** A frozen pacifier can cause anesthesia and pain relief when the child is going to sucking that.
- **Making busy the child's mind:** When the child has a pain, parents should distract a child's mind into a landscape or activity; they should take him to the bathroom, for example, and let him play with toys in water, or immerse them in the water. In the times of the child's sadness, they must embrace, kiss and hug him.
- **Teething biscuits:** These can be a choking hazard because they can be snapped into half which creates jagged edges in the baby's mouth if they have not been softened enough with baby's saliva. Instead, they can use Gluten Free teething biscuits which are safe to eat.
- **Breastfeeding:** The process of teething differs from one child to another one. Some children because of the exacerbation of pain during the sucking of the mother's breast refuse to do so., but others do not. If the baby has a tendency to bite hard on the breast while feeding, the mother should be patient and does massage the baby's gum with clean fingers before and after the breastfeeding session. Doing so will not provoke the baby to bite.
- **Cold fruits:** Parents can place the slices of fruits such as apples and bananas in a mesh feeder and give it to the baby to bite and eat. In this case, the mother has provided tasty snacks for the baby and also has performed an effective job in reducing the gum pain.

Conclusion

There is no need to change the baby's diet when they are teething. Teething is a physiological phenomenon that will be associated with the other symptoms such as drooling, gums swelling, biting on any objects, sleeping disturbances, changes in eating habits, and so on.

Fortunately, many methods exist for teething pain management. OTC pain-relief medicines such as ibuprofen or acetaminophen may help to dull the pain. Baby teeth gel containing topical benzocaine are available, but these should be used in great caution as they can affect the baby's blood oxygen levels that can lead to a fatal condition called methemoglobinemia as reported in many types of research.

But if the baby is very restless and has long cries, parents should go to a pediatrician to prevent dental problems in the future because the baby's gum may be infected.

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