

The Use of Popsicles after Dental Treatment with Local Anesthesia in Pediatric Patients

Diana Ram* / Jacob Efrat** / Naama Michovitz*** / Moti Moskovitz****

The purpose of the study was to assess how children felt after dental treatment when receiving a popsicle or a toy. Each patient received either a popsicle or a toy after dental treatment on the first visit, and the other on the second visit. A significant difference ($p=0.0235$) was found 10 minutes and thereafter 30 minutes after dental treatment. More children reported feeling better when they received a popsicle than when they received a toy.
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INTRODUCTION

Injections are the most anxiety-provoking procedure for dental patients and dentists.^{1,2} The average duration of a local anesthesia with 2% lidocaine, and with 1:100,000 epinephrine is 60 minutes for the pulp tissue, 170 minutes for the soft tissue (maxillary infiltration) and 85 minutes for pulp tissue and 190 minutes for soft tissue (mandibular block).³ Therefore, after dental treatment, children still feel numbing of the lips, tongue and soft tissues. Children may therefore show discomfort after dental treatment due to this sensation of numbness,⁴ and they may inflict auto-lesions of lips, tongue, cheek, and soft tissues due to it.

A simple and inexpensive therapy, cold application, has been accepted for decades as an effective non-pharmacologic intervention for pain management. Studies involving pain associated with injections revealed significant positive findings in adults but not in children.⁵

Versatile methods were employed by parents of children aged 1 to 7 years after minor outpatient surgery in the management of children's postoperative pain, subsequent to discharge from the hospital. The children expressed that they had experienced pain relief through the administration of pain medication, eating ice cream and playing.⁶ An ice cream or a popsicle could be considered by the child as a reward, but may also have a physiologic effect on anesthetized soft tissue.

The dental literature lacks solid data on this method. To the best of our knowledge, no study on the effect of ice and cold on soft

numb tissue have ever been conducted on children.

The purpose of the study was to assess the how children felt after dental treatment under local anesthesia when they received a popsicle or a toy.

MATERIALS AND METHODS

Thirty children aged 6 to 11 years old, who were undergoing dental treatment in the undergraduate pediatric dental clinic, participated in this study. They were a sample of patients who needed at least two clinical sessions of operative procedures preceded by local anesthetic injection in the same jaw, none of which was due to emergency. Subjects were selected based on their need for treatment, as well as meeting the age criteria. The average duration and complexity of treatment procedures were comparable in both sessions. The Hadassah human subject institutional board approved this prospective study and consent was obtained from each participant's parent or guardian.

Based on a preoperative behavioral assessment using the Frankl Scale⁷, all children demonstrated positive or definitely positive behavior during pre-treatment evaluation (ranking 3 or 4 in the Frankl Scale), and none of them needed a sedative or other chemical support for receiving dental treatment. They were treated by undergraduate students. All parents were informed about the treatments and treatment procedures and an informed consent was obtained.

After treatment, each patient was randomly assigned to receive either a popsicle or a toy (which children usually receive after dental treatment in the undergraduate clinic) for the first visit, and the alternative item at the second visit. Each child was a control of him/herself (cross over design).

Immediately after the treatment, and before the children received the popsicle or the toy, they were asked to complete the Wong-Baker FACES Pain Rating Scale FPS⁸ for subjective evaluation of feeling after the treatment. Verbal instructions were given to the child on how to utilize the FPS. The FPS measures the unpleasantness or affective dimension of a child's pain experience. The child is shown a set of six cartoon faces with varying facial expressions ranging from a smile/laughter to that of tears. Each face has a numerical

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value. The child selects the facial expression that best represents his/her feeling. The child is asked to select the face “which looks like how you feel deep down inside, not the face you show to the world”. The Wong-Baker FACES Pain Rating Scale (FPS) shows good construct validity as a self-report pain measure.⁸

Children were also asked to rank their feeling 15 and 30 minutes after treatment using the same FPS. The parents received a Wong-Baker scale to take home, and they were requested by telephone after one hour to ask how their children felt and to report their feelings.

Parents and children were asked to report their preference after the second visit.

The feelings of the children were evaluated immediately after treatment, after approximately 15 and 30 minutes, according to the age group, jaw, and gender by the repeated measures regression model, the repeated measures logistic model and the Fisher's exact test. Significance was set at $p < 0.05$.

RESULTS

There were 19 girls and 11 boys aged 6 to 11 (mean 8.1 ± 1.3). Immediately after treatment children preferred a toy rather than a popsicle and this difference was statistically significant ($p=0.0138$). No difference was found between boys and girls in the younger or older group. No difference whether the treatment provided was in the maxilla or mandible (table 1). A significant difference ($p=0.0235$) was found ten minutes after the end of the treatment, and children reported feeling better with less discomfort when they received a popsicle than when they received a toy. Children rated their feeling using the FPS of Wong and Baker as a positive feeling (0-2). This difference was true for boys and girls in both ages'

TABLE 1: Distribution of children's self report feeling immediately after treatment

		Children	Percentage of Children that reported good feeling	P value
popsicle/toy	toy	30	90%	0.0114 *
	popsicle	30	63%	
age	6-8	36	69%	0.1303 NS
	9-12	24	88%	
jaw	upper jaw	40	73%	0.3883 NS
	lower jaw	20	85%	

TABLE 2: Distribution of children's self report feeling 10 minutes after treatment

		Number of Children	Mean difference \pm SD	P value
popsicle/toy	toy	30	0.03 \pm 1.0	0.0235 *
	popsicle	30	-0.63 \pm 1.0	
age	6-8	36	-0.44 \pm 1.2	0.1441 NS
	9-12	24	-0.08 \pm 0.8	
jaw	upper jaw	40	-0.38 \pm 0.9	0.6122 NS
	lower jaw	20	-0.15 \pm 1.3	

groups, and no difference was found whether the toy or the Popsicle was received during the first or second visit, or if the treatment was provided in the upper or lower jaw. (Table 2)

Thirty minutes after treatment children reported appreciably feeling better when they received a popsicle than they did when they received a toy ($p=0.0060$). The young group felt significantly better than the older one ($p=0.0084$) (Table 3).

Children and parents considerably preferred a popsicle to a toy ($p=0.0040$) after dental treatment when they were asked to rate their preferences after the second visit.

DISCUSSION

The merit of giving presents to children as a reward in the dental office is generally agreed.⁹

After dental treatment children often feel discomfort due to the feeling of anesthetized soft tissue or pain due to the treatment itself.⁴

Our study showed a significant improvement in how children felt immediately after treatment, according to the Wong and Baker FPS, when they received a prize rather than a popsicle. The reason may be that children preferred receiving toys as well as the fact that immediately after treatment it was too soon to feel the effect of the ice on the tissue.

At 10 minutes and again at 30 minutes after receiving the popsicle or the toy, children reported feeling better with the popsicle than they did with the toy, which may be due to the fact that cold helped to overcome the feeling of discomfort after dental treatment with local anesthesia.

This finding may be in accordance with Sauls⁵ who reported that ice can be an effective non-pharmacological intervention for pain management. In addition, he discovered that the application of ice for longer than 10 minutes is unnecessary as there is no added benefit for extra application time. Ice may be reapplied if necessary as the analgesia only lasts for 30 minutes in some cases. This can be extrapolated to our study, and may be the reason why children reported a good feeling after 10 and 30 minutes of sucking the popsicle following dental treatment.

Children preferred a popsicle to a toy after dental treatment, and parents agreed that children behaved better following dental treatment when they received a popsicle rather than when they received a toy. This may be in accordance with a study conducted by Kankkunen *et al.*, who found that children expressed experiencing pain relief through the administration of pain medication, eating ice-cream and playing.⁶

Our study faces some limitations. In the present study feeling after treatment was assessed, but pain after treatment was not measured. In addition, it is very difficult to determine whether the cold or the taste of the popsicle made the difference. Another study to assess the effect of sucking ice on the soft tissue after dental treatment should be conducted.

CONCLUSION

• Children who received a popsicle after dental treatment with local anesthesia reported feeling better 10 and 30 minutes after treatment than they did

value. The child selects the facial expression that best represents his/her feeling. The child is asked to select the face “which looks like how you feel deep down inside, not the face you show to the world”. The Wong-Baker FACES Pain Rating Scale (FPS) shows good construct validity as a self-report pain measure.⁸

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CONCLUSION

• Children who received a popsicle after dental treatment with local anesthesia reported feeling better 10 and 30 minutes after treatment than they did

when they received a toy.

- Children and parents preferred a popsicle to a toy after dental treatment.
- Giving a popsicle could help children to feel better after dental treatment.
- This was true for boys and girls, and no difference was found when dental treatment was provided in the upper or lower jaw or during the first or second visit.

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